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DISEASES CAUSED BY BACTERIA AND FUNGI

SENECA, H. & LATTIMER, J. K. (1957). **Some implications of increasing antibiotic resistance of *Micrococcus pyogenes* var. *aureus*.**—*Arch. Path.* **64**, 481-486. 972

Strains of *Staph. aureus* resistant to the action of penicillin were also resistant, to a lesser degree, to other antibiotics particularly tetracycline, oxytetracycline, chloramphenicol and erythromycin. The authors suggested that chemotherapeutic agents (sulphonamides, nitrofurans, derivatives of aminosalicic acid and isonicotinic acid) may eventually supplant antibiotics of fungal origin in the treatment of infections caused by this organism.—R.M.

FOLEY, E. J. (1957). **Observations on the course of bovine mastitis following intramuscular injection of meticorten and penicillin.**—*Vet. Med.* **52**, 371-374. 973

I/m injection of 50-100 mg. of prednisone in 3 cows with *Streptococcus agalactiae* mastitis had a temporary anti-inflammatory effect, characterized by a decline in pH and a sharp drop in leucocyte count of the milk. Further cases of streptococcal mastitis were cured by i/m injection of a combination of prednisone and penicillin, followed a few days later by intramammary instillation of a prednisone acetate-penicillin-streptomycin combination.

—M.G.G.

POLJAK, V. (1957). **Anthrax na východní Slovensku. [Anthrax in eastern Slovakia.]**—*Vet. Čas.* **6**, 258-262. [In Czech, English, French, German and Russian summaries.] 974

Over the last 15 years the incidence of anthrax in cattle and in man in eastern Slovakia has markedly decreased. Human infections reported during 1941-50 numbered 115, and during 1950-55 only 29. Penicillin treatment was successful. Conventional control measures and regulation of rivers in endemic areas were

discussed and closer co-operation between the medical and veterinary profession was advocated.—E.G.

VIALIER, J. (1956-1957). **Recherches sur la fréquence des contaminations par le bacille tuberculeux bovin, au cours de différentes formes de la tuberculose humaine observées dans la région Lyonnaise. [Bovine type TB. in human beings in the Lyons region.]**—*Bull. Soc. Sci. vét. Lyon.* **58** & **59**, 55-68. 975

Of 311 strains of the tubercle bacillus isolated from patients in the Lyons region, 12 were of the bovine type. All 12 were from children, 7 from the cervical or submaxillary lymph nodes.

—M.G.G.

ČERNÝ, L. & GROCH, L. (1957). **O zvláštnostiach morfológických zmien pri tuberkulóze strieborných líšiek. [Tuberculous lesions in foxes.]**—*Sborn. čes. Akad. zemědělsk. Věd. Vet. Med.* **30**, 171-180. [In Slovak. English, German and Russian summaries.] 976

The authors described histopathological findings in 19 silver foxes in which TB. was diagnosed P.M. Lesions were present in nearly all organs, but particularly in lungs, liver and spleen. Most tissues were icteric. In the liver histiocytes in capillaries increased to such an extent as to cause destruction and atrophy of parenchyma cells. Endothelial cells of the capillaries phagocytosed tubercle bacilli as did histiocytes from the lining of the larger vessels. In the spleen there was activation of reticular and sinus cells. Neither in the liver nor in other organs was there formation of specific granulation tissue.—E.G.

EHRENKRANZ, N. J. & WAKSMAN, B. H. (1956). **Failure to transfer tuberculin sensitivity passively with plasma fractions containing alpha globulin.**—*J. exp. Med.* **104**, 935-945. 977

The authors were unable to confirm the

findings reported by Cole & Favour (1955) [*V.B.* 25, 2665], *i.e.*, that passive transfer of plasma fractions containing alpha globulin (IV plus V or IV-10) from tuberculin-sensitive g.pigs confers delayed sensitivity to tuberculin upon normal g.pigs. It is stated in an addendum that A. H. Gordon and J. H. Humphrey (National Institute for Medical Research, London), using a different method of fractionation, had similarly failed to confirm the above findings of Cole & Favour.—J. E. T. JONES.

DUBOS, R. J. & SCHAEGLER, R. W. (1957). Effects of cellular constituents of mycobacteria on the resistance of mice to heterologous infections. I. Protective effects.—*J. exp. Med.* 106, 703-717. 978

SCHAEGLER, R. W. & DUBOS, R. J. (1957). Effects of cellular constituents of mycobacteria on the resistance of mice to heterologous infections. II. Enhancement of infection.—*Ibid.* 719-726. [Authors' summaries modified.] 979

I. Vaccination with live B.C.G. organisms increased the resistance of mice to infection with virulent staphylococci. An even more striking protective effect could be elicited by i/p or s/c injection of small amounts (0.1 mg. or more) of killed B.C.G. organisms. The killed B.C.G. organisms retained most of their protective activity after prolonged heating at acid, neutral, or basic reaction—and after extraction with acetone, methanol, and NaOH (at pH 10.5). Some protective activity could be recovered in a fraction soluble in methanol at 55°C. I/p injection of killed B.C.G. organisms, or of methanol extracts of them, elicited in mice a high level of protection against i/v inj. of *Mycobact. fortuitum*. A protective effect, quantitatively and qualitatively similar to that elicited by B.C.G., resulted from the i/p or s/c injection of killed cells of *Mycobact. fortuitum*.

II. When the same quantity of killed B.C.G. organisms as that used by Dubos & SchaeGLer [I. above] was injected into mice, either i/v, i/p or s/c, simultaneously with or shortly after infection with *Staph. aureus* or *Mycobact. fortuitum*, the survival time of the mice was considerably shortened. When suspensions of killed B.C.G. were injected into mice infected several months before with small doses of various bacterial pathogens and still harbouring small numbers of living organisms in their organs, a marked increase in the numbers of living bacteria in the organs of the treated mice could be detected within a very few days, and a certain percentage of the animals died rapidly. One of the first and most constant manifestations

of the change in the infective process from the chronic to the acute state was the appearance of a large microbial population in the liver. This happened even though *Staph. aureus* and *Mycobact. fortuitum* are rapidly cleared from the liver of normal mice.

VERGE, J., RICHOU, R. & QUINCHON, C. (1957). Sur la production, en milieu liquide, de diastases protéolytiques par *Corynebacterium pyogenes*. [Production of proteolytic enzymes by *C. pyogenes*.]—*C. R. Acad. Sci., Paris* 245, 1471-1472. 980

The authors studied the lytic action of 6 strains of *C. pyogenes* on gelatin and fibrin in various liquid culture media.—R.M.

IVANOV, I. (1957). La listériose chez les ovins et les caprins. [Listeriosis in sheep and goats.].—*Bull. Off. int. Epiz.* 48, 571-583. 981

Listeriosis was found to be widespread in sheep and goats in Bulgaria, occurring exclusively during December to May and taking the form of abortion, meningo-encephalitis or enteritis. Two serological strains of *Erysipelothrix (Listeria) monocytogenes* were isolated. Experimental infection of sheep and goats with Group I resulted in abortion, meningo-encephalitis or septicaemia, whereas Group II caused abortion only. The agglutination test was a useful diagnostic aid in sheep, titres above 1:400 being regarded as specific.—H. SCOTT McTAGGART.

DONKER-VOET, J. (1957). Serological studies on some strains of *Listeria monocytogenes*.—*Tijdschr. Diergeneesk.* 82, 341-350. [In English.] 982

Forty-eight strains of the organism from various hosts and different countries were examined. The author concluded that the Type IV described by Paterson [*V.B.* 11, p. 745] could be divided into 5 different sub-types.—R.M.

DUNAEVA, T. N. (1957). [New experimental animal for biological research on listeriosis.]—*J. Microbiol., Moscow* 28, No. 9. pp. 51-55. [In Russian.] 983

The steppe lemming *Lagurus lagurus* was more susceptible to infection with *E. monocytogenes* than the white mouse or field vole, and was therefore more suitable for lab. experiments.—R.M.

ŠTERK, V., ČALIĆ, Z. & PETROVIĆ, K. (1956). Kolera pernate živine kao uzrok uginjavanja pačica. [Fowl cholera in ducklings.]—*Vet. Glasn.* 10, 822-826. [In Croat. English summary.] 984

Of 321 ducklings, 18 days old, 287 died

within about 3 weeks. *Pasteurella aviseptica* was demonstrated microscopically and bacteriologically. Adult ducks, geese and fowls on the same farm remained healthy. The remaining ducklings were given *Past. aviseptica* serum and survived.—E.G.

CHARLES, G. (1957). *Escherichia coli* infection in lambs.—*Aust. vet. J.* **33**, 329-330. 985

An occurrence of *E. coli* infection of lambs, in addition to that recorded by Roberts [V.B. 27, 3185], is described.—A. G. CULEY.

ELLIS, R. J., EDWARDS, P. R. & FIFE, M. A. (1957). The differentiation of the *Salmonella* and Arizona groups by utilization of organic acids.—*Publ. Hlth Lab.* **15**, 89-93. [Authors' summary modified.] 986

A total of 1136 *Salmonella* cultures and 621 Arizona cultures was tested for ability to utilize D-tartrate, citrate, mucate, and malonate within an incubation period of 20 hours. Although multiple patterns of reactions occurred the patterns could be divided into two groups, one of which was composed almost exclusively of salmonella, while in the other were practically all of the Arizona strains.

GAUGUSCH, Z. & KAFEL, S. (1957). Studies on growth increasing factor on artificial media using the keratin hydrolysate.—*Biul. Inst. Wet. Pulawy* **1**, 53-56. [In English.] 987

Keratin hydrolysate was successfully used as the source of amino-acids in media for the cultivation of *Salmonella dublin*, *S. pullorum* and other bacteria. Liquid media contained 1% and solid media 0.5% of keratin hydrolysate.—R.M.

MEYNELL, G. G. & STOCKER, B. A. D. (1957). Some hypotheses on the aetiology of fatal infections in partially resistant hosts and their application to mice challenged with *Salmonella paratyphi-B* or *Salmonella typhimurium* by intraperitoneal injection.—*J. gen. Microbiol.* **16**, 38-58. 988

The hypotheses of independent action, maximum synergic action and partial synergic action of micro-organisms in a partially resistant host are discussed. Mice were injected i/p with variants of *Salmonella paratyphi B* or of *S. typhimurium*. The relative frequencies of the variants of either organism in the heart blood varied greatly from mouse to mouse when the dose was 1 LD₅₀ or less and became progressively more uniform as the dose increased; challenge with a mixed inoculum produced similar results. This is considered to support the hypothesis of independent action.—T.E.G.R.

STOKES, J. L. & BAYNE, H. G. (1957). Growth rates of *Salmonella* colonies.—*J. Bact.* **74**, 200-206. [Authors' summary modified.] 989

The growth rates of a large number of *Salmonella* strains on agar media, and to a more limited extent in liquid media, were determined under a variety of cultural conditions. Most species grew rapidly on nutrient and trypticase soya bean agar and formed colonies 1.5 to 2.5 mm. or more in diam. in 18 hours at 35°C. In contrast, all strains of *S. pullorum* developed slowly and the colonies were therefore small, 0.3 to 0.8 mm. Strains of *S. gallinarum* exhibited growth patterns intermediate between the above two groups. The slower development of *S. pullorum* is due to a combination of longer lag period and a lower rate of multiplication during the exponential phase. The minimum, optimum and maximum growth temperatures for most salmonella species are 10°, 40° and 46°C. respectively. The pullorum-gallinarum groups grew best at 35°C. and did not tolerate the extremes of the temp. range as well as other salmonella. Neither did they develop as readily as the rapidly growing salmonella at pH 5 to 6 and above pH 8. The rate of growth of *S. pullorum* on trypticase soya agar could not be increased by a variety of changes in physiological and nutritional conditions. Only the addition of yeast extract increased the growth rate to any extent. This occurred also with the other salmonella species. The data indicate that the addition of yeast extract to such selective agars as SS and bismuth sulphite may be helpful in the isolation of slow growing salmonella.

NYIREDY, I. (1957). Az ondó szerológiai vizsgálatainak értéke a brucellosis elleni küzdelemben. [Serological tests applied to semen for the diagnosis of brucellosis.]—*Mag. állator. Lapja* **12**, 107-109. [In Hungarian. English and Russian summaries.] 990

Brucella organisms were demonstrated in the semen of a bull [no details given] showing no clinical symptoms, and negative to the tube agglutination test on semen although the serum was positive. The ring test on semen yielded a doubtful result in a dilution of 1:10, and weak agglutination in 1:5 dilution.

—ANDREW SEBESTENY.

CAMERON, H. S. (1957). A comparison of blood and whey brucellosis tests on 20,000 cows.—*J. Amer. vet. med. Ass.* **131**, 130-134. 991

In 269 herds containing 20,400 cattle 87% of the animals were negative and 4% positive to both blood and whey plate tests; 8.3% were positive or doubtful to the blood test while negative

to the whey test. This discrepancy is attributed to post-vaccination reactions, as most of these 8.3% were vaccinated as adults. It was concluded that the whey test is more specific than the blood test, and easier to perform.—M.G.G.

STILES, F. C., JR., ROEPKE, M. H., DRIVER, F. C. & ANDERSON, R. K. (1958). **Further studies on the whey plate test for brucellosis.**—*J. Amer. vet. med. Ass.* **132**, 4-9. **992**

Plate agglutination tests on serum and on whey were applied to 1,289 lactating cows in 51 herds containing reactors to the blood agglutination test and 22 herds containing animals that gave a suspicious reaction to the milk ring test and a negative or suspicious reaction to the blood agglutination test. Of the 93 blood test reactors 26 were classified as negative by the whey plate test. *Brucella* was isolated from the milk or tissues of 9 of these 26; in 3 of these 9 the tissues yielded the organism whereas the milk did not. Two cows that were negative to the blood test gave a positive reaction to the whey plate test. —F.E.W.

ROMVÁRY, J. (1957). *Brucella*allergének készítése és értékének megállapítása. [**Production and evaluation of brucella allergens.**]—*Mag. állator. Lapja* **12**, 105-107. [In Hungarian. English and Russian summaries.] **993**

Brucella allergens which were neither infective nor sensitizing and which could be stored for 5 months were produced, by acid hydrolysis, and by the method used for brucellin production, from mixed strains (bovine, porcine and Strain 19) and from Strain 19 alone. The allergic test, using 0.1 ml. subcutaneously, in conjunction with the serum agglutination test, revealed more positive cases in 136 cows [no details given] than either of the tests used alone.

—ANDREW SEBESTENY.

MEYN, A., SCHLISSER, T. & EHRLE, A. (1957). Über das Vorkommen von Brucellen in den Fleischlymphknoten banginfizierter Rinde. [**Occurrence of brucella in the lymph nodes of infected cattle.**]—*Arch. Lebensmittelhyg.* **8**, 193-195. **994**

Selected lymph nodes from 54 cattle which reacted to the agglutination test were examined culturally. *Br. abortus* was isolated from the superficial cervical and popliteal nodes of 8 cattle, from the mammary nodes of 7 and from the mesenteric nodes of 7.—R.M.

LERESCHE, E., DESPRÈS, P. & VALETTE, H. (1957). Quelques aspects des brucelloses dans l'inspection des viandes. [**Some aspects of brucellosis in meat inspection.**]—*Schweiz.*

Arch. Tierheilk. **99**, 440-446. [In French. English, German and Italian summaries.] **995**

Attention is drawn to the lack of uniformity in different countries in judgment of carcasses of animals slaughtered while affected with brucellosis. In some countries the carcass and organs are passed unconditionally for human food; some authorities recommend that the flesh should be regarded as only "conditionally fit" for food, while others recommend seizure of the abdominal organs of affected animals together with the udder and the regional lymph nodes. Refrigerated flesh of infected animals may contain viable bacilli for considerable periods, and in the U.S.A. human brucellosis has been observed in a factory which prepared unsmoked sausages. *Br. abortus* has been found in this product 58 days after manufacture, and the bacillus is also capable of resisting ordinary curing, though not smoking as applied commercially. Attempts were made to culture *brucella* from the muscle of pregnant and non-pregnant cattle which were excreting the organism in the milk and uterine secretions, but in 62 cows with chronic brucellosis all attempts were negative; though in the case of 9 recently aborted cows the organism was cultivated from 3. The authors do not consider that legislation with regard to brucella-infected carcasses would be justifiable.

—H. THORNTON.

ROTOV, I. V. (1957). [**Serotherapy in cattle spontaneously infected with brucellosis.**]—*Veterinariya, Moscow* **34**, No. 8. pp. 46-48. [In Russian.] **996**

Seventeen cattle, affected with brucellosis for 3 years and having agglutination titres mostly of 1:400, were given a s/c dose of 0.5 ml. of antiserum per kg. body wt. followed by a second dose 5-7 days later. Eight appeared to recover, as shown by agglutination and c.f. tests and examination of the blood picture. In a second group of 15 cattle, affected for 1-2 years and with agglutination titres of 1:800 and 1:1600, 3 appeared to recover after serotherapy.

—M.G.G.

PROHÁSZKA, L. (1957). Kísérletek avirulens brucella-törzsek előállítására. [**Attempts to produce avirulent brucella strains.**]—*Mag. állator. Lapja* **12**, 110-112. [In Hungarian. English and Russian summaries.] **997**

From a virulent strain of *Br. abortus*, a variant having special biochemical requirements and which eventually became avirulent (Strain K/6), was obtained by ultra-violet irradiation and penicillin screening as described by Plough *et al.* [*V.B.* **21**, 1630]. Serum from g.pigs

inoculated with Strain K/6 agglutinated the parent strain in 1:50 dilution and *Br. abortus* Strain 19. 6 of 10 white mice weighing 20–25 g. immunized with 5×10^5 organisms of Strain K/6, 5 of 10 immunized with Strain 19, and 1 of 10 non-immunized survived 12 days after i/p inoculation with 10^9 organisms of the parent strain. The correlation between the special biochemical requirements and the avirulence of certain strains needs further study.—ANDREW SEBESTENY.

PARNAS, J., BLITEK, D., KOZICKA, A. & ZUBER, S. (1957). **Testing of the virulence of *Brucella* strains in relation to chick embryos and white mice.**—*Bull. Acad. polon. Sci. Cl. II.* 5, 99–101. [In English. Russian summary Suppl. p.xiv.] 998

Chick embryos were inoculated in the yolk sac with 1000, 100, or 10 *Br. abortus* organisms of Strains 19, BA, or 24. All 3 strains caused pathogenic changes. On the ninth day 14 of 350 embryos inoculated with Strain 19 were still viable, but all of the 700 inoculated with Strains BA or 24 were dead by the seventh day. Serial passage of Strain 24 in chick embryos stabilized its virulence for mice.—M.G.G.

JOUBERT, L., VALENTIN, F. & PONCET. (1956–1957). Orchite brucellique bilatérale à *Brucella abortus* chez un lièvre. [Bilateral orchitis caused by *Brucella abortus* in a hare.]—*Bull. Soc. Sci. vét. Lyon* 58 & 59, 17–24. 999

An organism identified by its cultural characteristics as *Br. abortus* was isolated from abscesses in the testicles of a hare with bilateral orchitis.—T.E.G.R.

VAN DORSSEN, C. A. (1957). Komt ook in Nederland brucellose bij de haas voor? [Does brucellosis in hares also occur in the Netherlands?]—*Tijdschr. Diergeneesk.* 82, 680–685. [In Dutch. English, French and German summaries. English summary modified.] 1000

A museum specimen from a hare from which Gram-negative, aerobic, non-motile rods resembling brucella were isolated in 1952 was compared with the photographs in Thomsen's article [see *V.B.* 26, 311]. It was concluded that brucellosis in hares probably occurs in the Netherlands.

STRAUCH, D. & WINTER, H. (1956). Infektion eines Tierarztes mit dem Impfstamm *Brucella abortus* "19". [Infection in a veterinary surgeon with Strain 19.]—*Berl. Münch. tierärztl. Wschr.* 69, 321–324. [English summary.] 1001

A brucella strain, bacteriologically and serologically identical with Strain 19, was isolated

from the blood of a veterinary surgeon who had cut himself on an ampoule containing Strain 19. Clinical details are given.—E.G.

SADUSK, J. F., JR. & BORN, J. L. (1957). **Brucellosis in man, resulting from *Brucella abortus* (Strain 19) vaccine.**—*J. Amer. med. Ass.* 164, 1325–1328. 1002

A physician inoculating cattle with Strain 19 inadvertently sprayed his face and eyes with the vaccine when the needle blew off the syringe. A month later some cervical lymph nodes enlarged and after a further 5 days fever developed, accompanied by sore throat. The illness lasted for about 3 weeks, at the end of which symptoms subsided. *Br. abortus* Strain 19 was cultured from blood samples and brucella agglutinins were present in the blood from the onset of fever. The incubation period (31 days) was longer than that of naturally acquired brucellosis. Treatment with the tetracycline antibiotics in combination with streptomycin was recommended. To prevent this type of accident, syringes with lock-on needles should be used.—R.M.

KING, N. B. (1957). **The survival of *Brucella abortus* (U.S.D.A. strain 2308) in manure.**—*J. Amer. vet. med. Ass.* 131, 349–352. [Abst. from author's summary.] 1003

Broth cultures of *Br. abortus* Strain 2308, and a similar culture mixed with sterilized faeces, were non-viable after 4 hours' exposure to a temp. of 158°F. in a tank filled with faeces, urine and used bedding from cattle.

PRUDENTOV, N. A., POLKHOVSKII, F. Y. & RYABASHEV, P. A. (1957). [Efficacy of Strain 19 vaccine in brucellosis in sheep.]—*Veterinariya, Moscow* 34, No. 8. pp.59–60. [In Russian.] 1004

In 1954, 39,401 sheep in flocks infected with brucellosis were vaccinated with Strain 19 of *Br. abortus*. Some of the flocks were revaccinated in the following year. In 1956 culture of 206 foetuses from sheep which had been vaccinated once yielded brucella in 19 cases, but culture of 20 foetuses from sheep vaccinated twice was negative. In 2 flocks brucella isolated from aborted foetuses were identified as *Br. abortus*. It is considered that vaccination should be carried out in summer and not at the time of insemination or during pregnancy.—M.G.G.

STURMAN, I. I. (1957). [Comparative value of serological reactions in the diagnosis of brucellosis in sheep.]—*Veterinariya, Moscow* 34, No. 8. p. 60. [In Russian.] 1005

Of 883 sheep on farms infected with brucel-

losis 50 were positive to the c.f. test, 33 to the agglutination test with 10% NaCl, and 7 to the agglutination test with 0.85% NaCl. In a second trial with 6710 sheep, 112 were positive to the c.f. test (of which 81 were negative or doubtful to the agglutination test with 10% NaCl) and 57 doubtful, while 51 were positive to the agglutination test with 10% NaCl (of which only 14 were negative or doubtful to the c.f. test) and 60 doubtful. Monthly examination of suspected sheep by the allergic, agglutination and c.f. tests is recommended.—M.G.G.

LEVCHENKO, I. D. & DROZHSHIN, V. N. (1957).

[Use in outbreaks of abortion in sheep of the agglutination test with 10% NaCl.]—*Veterinariya, Moscow* 34, No. 8. p. 58. [In Russian.] 1006

In a flock of 597 sheep, of which 200 had aborted, 89.5% were positive to the c.f. test, 88% to the agglutination test with 10% NaCl, 84% to the allergic test with brucella lysate, and 79% to the agglutination test with 0.85% NaCl. [See also *V.B.* 27, 3512.]—M.G.G.

KOCHURIN, A. I. & PAKHOTIN, V. Y. (1957).

[Activity of brucella hydrolysate.]—*Veterinariya, Moscow* 34, No. 8. p. 58. [In Russian.] 1007

On farms infected with brucellosis 501 sheep were injected i/d with 0.2 ml. of brucella hydrolysate behind the right shoulder blade and 0.2 ml. of brucella lysate behind the left shoulder blade. 116 sheep reacted to the hydrolysate and 68 to the lysate. Of these 52 reacted solely to the hydrolysate and 4 solely to the lysate. The reactions to hydrolysate were the stronger. Of 68 sheep that were tested a second time after failing to respond, 20 reacted to the hydrolysate and 12 to the lysate.—M.G.G.

SHARONOV, Y. A. (1957). [Importance of sensitization in the allergic diagnosis of brucellosis in sheep.]—*Veterinariya, Moscow* 34, No. 8. p. 58. [In Russian.] 1008

Brucella lysate was injected i/d into 670 sheep in an infected flock. Those that did not react were given a second injection at the same spot. Sixteen reacted to the first injection and 22 to the second. Four out of 9 of the first group and 9 out of 10 of the second group were positive to the agglutination and c.f. tests.—M.G.G.

GAMČÍK, P. (1957). Príspevok k poznaniu zmien semena u baranov s infekčnou epididymitidou. [The semen of rams with infectious epididymitis.]—*Vet. Čas.* 6, 238-246. [In Slovak. English, French, German and Russian summaries.] 1009

Semen from rams with infectious epididymitis caused by brucella infection, compared with that of normal rams, was of a lower concentration and pH. Motility and viability were impaired. In about 60% of spermatozoa there were anomalies of varying degrees, mostly decapitation and deformed tails.—E.G.

STOENNER, H. G. & LACKMAN, D. B. (1957).

A preliminary report on a brucella isolated from the desert wood rat *Neotoma lepida* Thomas.—*J. Amer. vet. med. Ass.* 130, 411-412. 1010

An organism isolated from *N. lepida* was identical with *Br. suis* in most of the biochemical characteristics, antigenic composition, and colonial and cellular morphology. On the other hand, it produced acid in arabinose, galactose, laevulose, xylose, and glucose, it was inhibited by concentrations of thionin and basic fuchsin that are ordinarily used for typing brucella, and the m.i.d.₅₀ for mice was 2-3 organisms, but for g.pigs 100 times as many.—M.G.G.

SCHEU, O. & MAYER, H. (1957). Untersuchungen über das Auftreten und Persistieren sowie die Spezifität humoraler Antikörper bei Schafen nach Durchführung der Intradermopalpebralprobe mit Brucella-Melitensis-Allergen. [Occurrence, persistence and specificity of humoral antibodies in sheep following the intradermopalpebral test with *Br. melitensis* allergen.]—*Berl. Münch. tierärztl. Wschr.* 70, 326-328. [English summary.] 1011

Following the intradermopalpebral test in sheep, using *Br. melitensis* allergen, the antibody titre reaches a peak at 7-14 days and in most cases falls to 1:20 at 30-40 days. Antibodies are occasionally detectable for as long as 80 days. —H. SCOTT McTAGGART.

I. RENOUX, G., SACQUET, E., VELASQUEZ, E. E. & CASTELLANI, A. (1957). Études sur la brucellose ovine et caprine. XIV. Dépistage sérologique de la brucellose caprine individuelle. [Sero logical diagnosis of brucellosis in the goat.]—*Arch. Inst. Pasteur Tunis* 34, 37-43. 1012

II & III. RENOUX, G. (1957). Études sur la brucellose ovine et caprine. XV. Du diagnostic sérologique de la brucellose individuelle des chèvres artificiellement infectées par *Br. melitensis*. XVI. Essais de dépistage de la brucellose par réactions sérologiques comparées aux cultures chez des chèvres tuées aux abattoirs de Tunis. Présence probable du phénomène de tolérance immunitaire. [Sero logical diagnosis of *Br. melitensis* infec-

tion in goats. **Diagnosis of brucellosis in slaughtered goats by serological and cultural methods.**]—*Ibid.* 207-225 & 227-229. 1013

I. Sera from 24 artificially infected goats were examined at intervals from 3-11 weeks after infection by six serological tests. The tube agglutination test was unreliable, because few of the tests were positive at titres higher than 1:40. A combination of any two of the following was recommended for reliable diagnosis: Coombs test, c.f. test, slide agglutination test, or a bacteriotropin (opsonin) test.

II. Details are given of the tests used, the results of which were confirmed by examination of sera from 38 artificially infected goats during 7 months after infection. The flocculation test described by Hunter & Colbert [*V.B.* 27, 1017] gave reliable results with goat sera.

III. Sera from 240 slaughtered goats were tested by the serological tests described above and all the results were negative, although brucella organisms were recovered from the tissues of 13 of them. It was suggested that immunological tolerance was responsible for this discrepancy.—R.M.

KUCHEROVA, N. T. (1957). [**Brucellosis in wild grey rats.**]—*J. Microbiol., Moscow* 28, No. 9. pp. 25-29. [In Russian.] 1014

Although rats were susceptible to *Br. melitensis* infection and acted as carriers in lab. experiments, no evidence of infection was found in 239 grey rats from infected farms.—R.M.

JANOK, J., NIŽNÁNSKY, F. & KRČMÉRY, V. (1957). Elektrometrické stanovenie lipázovej aktivity u brucelových kmeňov. [**Electrometric determination of lipase activity in brucella strains.**]—*Vet. Čas.* 6, 222-227. [In Slovak. English, French, German and Russian summaries.] 1015

In a previous paper, Nižnánsky & Krčméry [*V.B.* 27, 2623] described a titration method for the study of lipase activity in brucella. In the present paper, the authors described a technique by which the change in pH of cultures, resulting from the presence of butyric acid formed by the action of the enzyme, was determined electrometrically.—E.G.

MAMATSASHVILI, E. G. (1957). [**Some properties of brucella bacteriophage.**]—*J. Microbiol., Moscow* 28, No. 9. pp. 8-11. 1016

Brucella bacteriophage was widely distributed: it was present in 53 out of 97 samples of cultures, vaccines, or milk, urine and faeces from vaccinated cows. The majority of strains of phage acted on only one species of brucella.

A strain of phage active against brucella on a solid medium was often inactive in a liquid medium.—R.M.

SCHEIDY, S. F. (1957). **Leptospirosis vaccination studies in cattle, swine, sheep, and horses.**—*J. Amer. vet. med. Ass.* 131, 366-368. [Author's summary modified.] 1017

The use of a killed *L. pomona* vaccine in cattle, pigs, sheep, and horses is reviewed. Serological evidence indicates that it induces the formation of antibody. Challenge experiments evaluated according to serological response and absence of clinical signs indicate that vaccinated cattle, sheep, and pigs are protected against leptospirosis. Trials in cattle, pigs, and horses indicate that revaccination is safe. The vaccine does not appear to elicit an anamnestic response in young cattle previously vaccinated with *Brucella abortus* (Strain 19).

FRANK, F. W., BAILEY, J. W. & HEITHECKER, D. (1957). **Experimental oral transmission of vibronic abortion of sheep.**—*J. Amer. vet. med. Ass.* 131, 472-473. [Authors' summary modified.] 1018

Of 12 yearling ewes inoculated orally with *Vibrio fetus* infected tissues during the last half of the third month of pregnancy, 11 aborted; the 12th was non-pregnant. The average incubation period was 19 days. *V. fetus* was isolated from 13 of the 15 aborted fetuses. Of 12 control ewes, only one aborted and the twin fetuses were culturally negative for *V. fetus*.

BYSTRICKÝ, V. & STRICKER, F. (1957). *Vibrio coli*. I. Morfológia a tvorba granulárnych útvarov. [**Morphology and formation of granules.**]—*Vet. Čas.* 6, 29-34. [In Slovak. English, French, German and Russian summaries.] 1019

Vibrio coli, examined by electron microscopy, appeared to be amphitrichous—e.g. it had a flagellum at each pole. In older cultures spore-like granules were present which were viable in ascites broth media for 251 days at 37°C. These granules were of a diameter of 1.3 μ and had a cyst-like appearance. Some were only about 0.4 μ in size which probably accounts for the organism sometimes being described as filtrable.—E.G.

THOMAS, J. H. (1957). **The eradication of contagious footrot of sheep.**—*Aust. vet. J.* 33, 263-266. Discussion: 266-270. 1020

The clinical features differentiating "foot-scald" from contagious foot rot are described. Although organisms resembling *Fusiformis nodosus* are seen in smears from "foot-scald"

repeated attempts to isolate them failed with a method which yielded *F. nodosus* regularly from true foot rot. Medicaments used for the treatment of foot rot are discussed and the importance of delayed relapses after treatment in the eradication of the disease is emphasized. Delayed relapses occurred after treatment by formalin foot-baths or by Terramycin in methylated spirits or in an ointment, but not after 10% Chloromycetin in methylated spirits.

—D. F. STEWART.

GROSSBARD, E. & PRESTON, R. D. (1957). Some submicroscopic structural features of bacteria.—*Nature, Lond.* **179**, 448-449. 1021

Dried preparations of intact cells of *Bacillus subtilis*, *B. megatherium*, *Esch. coli* and *Proteus vulgaris* were used for X-ray diffraction studies; the resulting powder diagrams of all 4 bacteria were fairly similar. Of the 3 major diffraction rings in the diagram the first is wide and diffuse, with an intramolecular spacing of 4.4-4.6 Å° and is provisionally ascribed to proteins. The other 2 rings, with spacings of 3.8-3.9 Å° and 4.2 Å°, respectively, may be more specifically lipids and this was confirmed for *E. coli*; there was also strong evidence that the lipids lie in or near the cell wall. Certainly in the case of *E. coli*, and most probably with other bacteria, the lipids are situated in the cell wall and form one lamella or more, completely enveloping that part of the bacterium which lies within. The location of such a lamella could not be precisely defined, but if the external surface of the cells consists of a polysaccharide, then the lipid layer must lie internally to such a polysaccharide layer.—E. V. L.

✓ GITTER, M. & AUSTWICK, P. K. C. (1957). The presence of fungi in abomasal ulcers of young calves; a report of seven cases.—*Vet. Rec.* **69**, 924-928. 1022

Abomasal ulcers were found in 7 of 208 calves examined P.M. at Weybridge between May 1954 and December 1956, and in every case fungal hyphae were detected in the ulcers but never in other lesions in the abomasum. The gross, histological, bacteriological and mycological findings are described. Fungi could not be cultured from the ulcers, possibly because of inhibition by bacteria, but potentially pathogenic fungi (*Absidia* and *Mucor*) were isolated from the contents of the abomasum of 4 calves examined. The significance of the ulcers and their relationship to the fungal hyphae are not known.—E. G. WHITE.

✓ KAPLAN, W., HOPPING, J. L., JR. & GEORG, L. K. (1957). Ringworm in horses caused by the dermatophyte *Microsporum gypseum*.—*J. Amer. vet. med. Ass.* **131**, 329-332. [Authors' summary modified.] 1023

The clinical and mycological findings in ringworm in horses, caused by *M. gypseum*, are described. The only dog and 8 of 11 horses on the premises developed lesions. There was no evidence of transmission to human contacts. This is the first authenticated outbreak in horses in the U.S.A.

✓ MCPHERSON, E. A. (1957). The influence of physical factors on dermatomycosis in domestic animals.—*Vet. Rec.* **69**, 1010-1013. [Author's summary modified.] 1024

In the dark, at room temp., arthrospores of *Trichophyton verrucosum* and *T. equinum* were viable in skin scrapings after 4½ and 4 years respectively, and those of *T. mentagrophytes* and *M. canis* after 1½ years. In skin scab 1.5 mm. thick, arthrospores of *T. verrucosum* were protected from the action of ultra-violet light equivalent to 437 hours of midday, midsummer, and mid-latitude sunshine. It was demonstrated that while u.v. light was lethal in a few minutes to *T. verrucosum* in vitro, hair, skin, and lesion scabs protected it. In northern Britain the spread of ringworm in cattle caused by *T. verrucosum* was not limited by summer sunshine.

✓ LERNER, E. M. JR. & SILVERSTEIN, E. (1957). Experimental infection of rats with *Streptobacillus moniliformis*.—*Science* **126**, 208-209. 1025

A strain of *Streptobacillus moniliformis* isolated from naturally occurring middle-ear infection in old laboratory rats produced polyarthritis in 37 out of 40 young rats, 5 to 7 days after i/v inoculation. The infection involved only the bones, joints and periarticular tissues. S/c inoculation of the same strain had no effect.

—E. G. WHITE.

MARTINS MENDES, A. (1957). A dead vaccine against bovine pleuropneumonia.—*Bull. epiz. Dis. Afr.* **5**, 175-176. [In French pp. 223-224.] 1026

Calves were inoculated s/c with 5 or 10 ml. of a formalized vaccine adsorbed on aluminium hydroxide. Challenge infection 10 weeks later with virulent bovine contagious pleuropneumonia organisms caused death in control calves and in most of those vaccinated with 5 ml., but the calves which had received 10 ml. were immune. The vaccine is now used in the field

and is recommended for animals being vaccinated for the first time. It is followed 3 or 4 weeks later by culture vaccine injected into the tail.

—M.G.G.

SEN, M. C. (1957). **Chemotherapeutic treatment of contagious bovine pleuropneumonia in Assam.**—*Bull. epiz. Dis. Afr.* **5**, 199-202. [French summary, p. 279.] 1027

Various drugs were used to treat 434 affected cattle. Sulphadimidine sodium in a 33% soln. was the most effective. Of 32 animals receiving it i/v within the first 3 days of clinical symptoms 22 recovered.—M.G.G.

SPLITTER, E. J. (1958). **The complement-fixation test in diagnosis of eperythrozoonosis**

See also absts. 1284-1285 (reports, Norway); 1286 (book, bacteriology).

DISEASES CAUSED BY PROTOZOAN PARASITES

MAKHINYA, E. M. (1957). [Study of the microflora associated with bovine trichomoniasis.]—*Sborn. Rabot vsesoyuz. Inst. eksp. Vet. pp.* 136-143. [In Russian.] 1029

The bacterial flora of the genital tract of 50 healthy cows was compared with that of 25 cows with trichomoniasis. Infection was associated with a general increase in the species of bacteria present, and particularly with *Ps. pyocyanea* and *C. pyogenes*. Some bacteria (*Sarcina luteola*, *M. tetragenus*, *M. ceres*) stimulated the growth of cultures of trichomonads (presumably *Tr. foetus*), and others (*E. coli*, *Bact. grüenthal*, *Bact. oxyphilum*, *Chromobact. miniaceum*) inhibited growth; *Corynebact. renale*, *C. pyogenes* and *Ps. pyocyanea* did not influence growth. The lytic action of serum from healthy farm animals on cultures of trichomonads was studied. Serum from fowls was strongly lytic, and this action was even stronger with serum from fowls previously inoculated with cultures of trichomonads.—R.M.

MADEYSKI, S. (1957). Leczenie buhajów sakażonych rzęsistkieni zmodyfikowaną metodą Abelein'a. [Treatment of trichomoniasis in bulls.]—*Méd. vét., Varsovie* **13**, 460-462. [In Polish.] 1030

M. cured 12 infected bulls with a modified form of the treatment described by Abelein (1937), and he is of the opinion that the temperature of the antiseptic lotion applied to the preputial mucosa is the most important factor. This should be about 50°C. The lotion should be applied for about 10 min. and then followed by one of the acridine dye ointments.—M. GITTER.

in swine.—*J. Amer. vet. med. Ass.* **132**, 47-49. [Author's summary modified.] 1028

A c.f. test similar to that used in diagnosis of bovine anaplasmosis was of value for diagnosis of acute eperythrozoonosis in pigs. Antigens were prepared from carbon dioxide precipitated r.b.c. heavily parasitized with *Eperythrozoon suis*. The serum became positive in an average of 2.5 days after the onset of clinical illness, and continued positive for about 2-3 weeks. Carriers of the disease were generally negative to the test. Non-specific positive reactions to the anaplasmonis c.f. test occurred in the majority of serum samples from pigs acutely affected with eperythrozoonosis.

SHUMARD, R. F. (1957). **Studies on ovine coccidiosis. I. Some physiological changes taking place in experimental infections with *Eimeria niniae-kohl-yakimovi* (Yakimov and Rastegayeva, 1930) and *Eimeria faurei* (Moussu and Marotel, 1901).**—*J. Parasit.* **43**, 548-554. [Author's summary modified.] 1031

Lambs infected with *E. niniae-kohl-yakimovi* and *E. faurei* exhibited lowered feed consumption, lassitude, generalized incoordination and slight scouring with some bleeding. No significant decrease in water consumption per lb. body wt. took place. There was a decrease in the percentage of feed protein digested. Total serum protein did not fluctuate but changes in the albumin/globulin ratio indicated an increase in globulins. While blood haemoglobin and haematocrit values indicated absence of even moderate haemorrhage, inorganic serum phosphorus levels dropped and blood glucose levels rose. All these physiological changes in the host could be correlated with the growth and development of the endogenous phases in the life cycle of the coccidia.

DAVIES, S. F. M. (1957). **An outbreak of duck coccidiosis in Britain.**—*Vet. Rec.* **69**, 1051-1052. [Author's summary modified.] 1032

An outbreak of duck coccidiosis in Gt. Britain is described. Oocysts of *Eimeria* and *Tyzzeria* were recovered and infections reproduced in the laboratory, but they were not sufficiently severe to cause disease.

GARDINER, J. L. (1957). **A comparison of the effect of aureomycin in combination with**

three levels of sulfamethazine in feed for the control of cecal coccidiosis of chickens.—

J. Parasit. 43, No. 5, Sect. 2, p. 17. [Only abst. given. Abst. modified.] 1033

Week-old chicks were inoculated with large numbers of sporulated oocysts of *Eimeria tenella* and were then fed mash containing 3 levels of sulphadimidine and/or aureomycin. All 3 concentrations of sulphadimidine, 0.05, 0.075, and 0.125%, when fortified with 200 g. of aureomycin per ton of mash and fed continuously throughout the experiment prevented mortality and promoted normal growth; the best growth and the fewest pathological changes were in those receiving 0.125%. When aureomycin was omitted from the mash, only that containing 0.125% sulphadimidine checked clinical and pathological changes.

ČERNÝ, V. (1957). Kotázce druhové příslušnosti původců piroplasmos skotu na našem území. [Classification of the agents of bovine piroplasmosis in Czechoslovakia.]—*Vet. Čas.* 6, 100-104. [In Czech. English, French, German and Russian summaries.] 1034

Françaiella caucasica, usually not seen outside the Soviet Union, was identified together with *Babesia bovis* in blood smears from cattle with piroplasmosis in eastern Slovakia.

—E.G.

DE ROEVER-BONNET, H. (1957). The epidemiology of toxoplasmosis.—*Docum. Med. geogr. trop.* 9, 17-26. [In English.] 1035

The incidence of toxoplasmosis in human

beings and in animals in different parts of the world is discussed and results of a serological survey (using the Sabin test) in human beings and in animals in Amsterdam (during 1951-55) are given in tabular form. Although reactors were found among human beings, domestic pets and slaughter cattle there was no direct evidence of an epidemiological link.—T.E.G.R.

JACOBS, L. & MELTON, M. L. (1957). A procedure for testing meat samples for *Toxoplasma*, with preliminary results of a survey of pork and beef samples.—*J. Parasit.* 43, No. 5, Sect. 2, 38-39. [Only abst. given. Abst. from abst.] 1036

Since it has been shown, in rats, that diaphragm muscle is found positive as frequently as other muscles, a survey was initiated using diaphragm from pigs and cattle slaughtered at Baltimore, U.S.A. Preliminary data indicated a prevalence of about 22% in pigs, 0% in cattle.

GIROUD, P. & DUMAS, N. (1957). Essai pour la mise en évidence des anticorps dans la toxoplasmose, pouvoir cytotoxique des toxoplasmes lysés. [Identification of toxoplasma antibodies by the cytotoxic action of lysed toxoplasms.]—*C. R. Acad. Sci., Paris* 245, 1185-1186. 1037

Toxoplasms treated with immune serum had a cytotoxic action on chick fibroblasts in tissue culture within 24 hours. Toxoplasms alone or treated with normal serum did not affect fibroblasts until the 72nd hour or later. This test had possibilities for diagnosis.—R.M.

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

GROSSO, A. M. (1957). La fiebre aftosa en el Jardín Zoológico de Buenos Aires en los últimos quince años. [Foot and mouth disease in the Buenos Aires zoo.]—*Gac. vet., B. Aires* 19, 54-55. 1038

In the last 15 years 3 outbreaks were reported, in 1942, 1948 and 1955. They affected cattle, buffaloes, deer, American bison, and grizzly bears. Control measures were isolation, and disinfection with 2% sodium hydroxide.

—M.G.G.

VERGE, J., DHENNING, LOUIS, DHENNIN, LEON & QUINCHON, C. (1957). A propósito de algunos accidentes de la vacunación anti-aftosa en los ovinos. [Losses in sheep after inoculation with foot and mouth disease vaccine.]—*Gac. vet., B. Aires* 19, 77. 1039

Of 8,000 sheep given a formolized F. & M. disease vaccine, 24 died. A local oedema appeared 48 hours after vaccination, which pro-

gressed beneath the abdomen as far as the udder. Death supervened 2-8 days later. P.M. examination revealed that the vaccine had been injected into the muscle of the sternal region. *Clostridium welchii*, *Cl. pseudo fallax* and *Cl. capricum* were recovered.—M.G.G.

PAY, T. W. F. (1957). The propagation of the virus of foot-and-mouth disease in monolayer cultures of adult bovine tongue epithelium.—*Proc. R. Soc. Med.* 50, 919-922. 1040

Cell suspensions prepared by the method described consisted of a mixture of single cells and cell clusters of varying sizes; the former gave rise to a growth of discrete polygonal-shaped cells and the latter to an almost intact "membrane-like" sheet. Unadapted virus strains multiplied in both "membrane" and "polygonal" type cells and produced cytopathogenic changes in the former only, some attenuated strains multiplied in both types of cell and failed

to produce cytopathogenic effects in either, and some other attenuated strains failed to multiply at all in tongue epithelial cell cultures.—E.V.L.

KOJNOK, J. & GRÉCZI, E. (1957). Az Aujeszky-féle betegség elleni szérum alkalmazása szopós malacok megvédésére, fertőzött állományokban. [Serum for the protection of piglets against Aujeszky's disease in infected premises.]—*Mag. állator. Lapja* 12, 102-104. [In Hungarian. English and Russian summaries.] 1041

Large White pigs were hyperimmunized using Aujeszky virus propagated in tissue cultures. Their serum, injected s/c in doses of 10-20 ml., protected against natural infection 339 of 341 Large White, 133 of 185 Mangalitsa and 408 of 417 cross-bred unweaned piglets, 4 weeks old, while the death rate in untreated control pigs was 30.4%. The serum neutralized the virus *in vitro*. The serum must be given immediately after infection.

—ANDREW SEBESTENY.

JANSEN, J. & KUNST, H. (1957). On the localization of the virus of Aujeszky in the central nervous system.—*Tijdschr. Diergeneesk.* 82, 674-679. [In English, Dutch, French and German summaries. Authors' summary modified.] 1042

The virus of Aujeszky's disease is mainly neurotropic. To diagnose spontaneous cases rabbits should be inoculated with that part of the central nervous system corresponding to the pruritic area. Twelve rabbits were injected s/c with brain material from 3 cows with itching in the hind quarters. They remained normal, whereas 14 rabbits inoculated with spinal cord all succumbed.

IVANOV, X. (1956). [Pathology of sheep pox.] pp. 174. Sofia: Izdanie na Bulgarsk. Akad. na Naukite. 14.10 leva. [In Bulgarian, English and Russian summaries.] 1043

A detailed account of the histopathology of sheep pox lesions in the skin and internal organs, with remarks on inclusion bodies. There are 80 photomicrographs and 4 plates. The English summary covers 8 pages.—R.M.

SABBAN, M. S. (1957). The cultivation of sheep pox virus on the chorioallantoic membrane of the developing chicken embryo.—*Amer. J. vet. Res.* 18, 618-624. 1044

A virulent (Cairo S) strain of sheep pox virus was cultivated on the chorioallantoic membrane of chick embryos in 21 passages alternating between sheep and chick embryos: the titre reached 10^{-5} and 10^{-6} . The cultured virus

caused generalized infection in sheep and afforded cross immunization against both the original strain and a Roumanian strain of sheep pox. The best incubation temperatures were 36° and 37°C. and maximum yields of virus were after 2, 3 or 4 days. Attempts to cultivate the Roumanian strain on the chorioallantoic membrane were not successful.—E.V.L.

ZUFFA, A., ŠKODA, R. & ALBRECHT, P. (1957). Možnosť kontaminácie kuracích zárodkov vírusom myšej ektromélie pri práci vo virologickom laboratóriu. [Contamination of chick embryos with the virus of murine ectromelia.]—*Vet. Čas.* 6, 228-237. [In Slovak. English, French, German and Russian summaries.] 1045

A virus, present from at least the fifth passage in chick embryos inoculated with avian respiratory disease material, was identified as that of murine ectromelia. How infection of the passage material had taken place was not established. The effect of the virus on chick embryos and mice was described.—E.G.

BAMBERGER, K., SZAKMÁRY, G. & KAKUK, T. (1957). Kísérletek pulykáról származó himlővírusból készült vakcinával. [A fowl pox vaccine from turkeys.]—*Mag. állator. Lapja* 12, 112-117. [In Hungarian. English and Russian summaries.] 1046

A vaccine prepared from the 12th chorioallantoic passage of a strain of fowl pox virus from turkeys was used (after trials in adult hens and turkeys and in poults 10 weeks old) in two flocks of yearling turkeys in which the incidence of the infection was 22 and 25%. Spread of the infection ceased in the second week after vaccination, and after 2 months no further cases occurred. In well-grown healthy birds the vaccine was innocuous and conferred a better immunity than commercial vaccines. The wing-web method gave the best results. Over 4 months of age is considered the best time for vaccination.—ANDREW SEBESTENY.

ZUFFA, A. & ŠKODA, R. (1957). Pokus o imunizáciu hydiny proti vitáčím sypaniciam vakcínami z chorialantoických blán kuracích zárodkov. [Immunisation of fowls against fowl pox with vaccines prepared from chorio-allantoic membranes of chick embryos.]—*Vet. Čas.* 6, 62-75. [In Slovak. English, French, German and Russian summaries.] 1047

Chick embryos were infected with an indigenous strain of fowl pox virus, with a commercial vaccine consisting of fowl pox virus attenuated

by passage in pigeons, and with an Egyptian fowl pox vaccine strain. Suspensions of chorio-allantoic membranes were injected s/c into fowls or rubbed into the skin. The indigenous virus was too virulent, the pigeon-passaged virus failed to produce immunity, but the Egyptian strain was effective following s/c or percutaneous application. Production of vaccine from this strain for use in the field was considered.

—E.G.

MAYR, A. & WITTMANN, G. (1957). **Observations on local spread of pox viruses in tissue.**—*Science* **125**, 1034-1035. 1048

Histological examination of embryonated eggs inoculated on the chorio-allantoic membrane with fowl pox virus revealed that the virus spread outwards from its foci in alternate phases of high and low activity and at a certain point stopped. The process was characterized by the formation of ring zones, undulation of the entodermal proliferations, and the appearance, at regular intervals, of shaggy ectodermal proliferations. The entodermal proliferation at the periphery extended far beyond the last alteration in the ectoderm. More distinct and constant results were obtained with fowl pox virus than with vaccinia, cow pox and variola viruses. [See also *V.B.* **27**, 1749.]—M.G.G.

SZCZYGIŁSKA, J., LORKIEWICZ, Z. & PARNAS, J. (1957). Recherches diverses sur les virus pneumotropes de l'homme et du porc. [**Pneumotropic viruses in man and pigs.**]—*Rev. Path. gén.* **57**, 567-593. 1049

A virus, designated G1, was isolated from the lungs of a piglet with influenza. This virus was pathogenic for mice, and lung extracts from experimentally infected mice agglutinated chicken r.b.c. at 1:160; it grew on chick embryos and the amniotic and chorioallantoic fluids developed haemagglutinating properties. Cross haemagglutination revealed a relationship between this virus and strains isolated from adult and young pigs but not strains isolated from man. The gross and microscopic lesions set up by the virus in the respiratory tract and associated lymph-nodes of pigs and g.pigs are described. Newcastle disease virus was demonstrated in eggs from infected farms or from premises where vaccination with a live attenuated virus had been practised. A virus analogous to that of Newcastle disease was demonstrated culturally and serologically in the lungs and mucus of a piglet with influenza. It is considered possible that pigs on premises infected with Newcastle disease pick up the virus which adapts itself to the nasal passages, passes into

the bronchi and alveoli and, in favourable circumstances, causes pneumonia. Haemagglutination and HI tests were carried out with suspensions of lung tissue and of respiratory discharge from infected pigs. Interference between the G1 virus and strains A/PR8 and B/LEE of human influenza was observed only when concentrated heat-killed G1 virus was used, when the mice survived for 3-5 days (compared with controls) [see also *V.B.* **28**, 94].—T.E.G.R.

POLLEY, J. R. & GUERIN, M. M. (1957). **The use of beta-propiolactone for the preparation of virus vaccines. II. Antigenicity.**—*Canad. J. Microbiol.* **3**, 871-877. [Authors' abstr. modified.] 1050

The antigenicity of influenza virus suspensions rendered non-infective with beta-propiolactone was investigated. Vaccines were prepared which were antigenic as indicated by the formation of specific antibody in mice and g.pigs. These vaccines also protected mice against challenge with live virus.

GREŠÍKOVÁ, M. (1957). Vylučovanie vírusu kliešťovej encefalitidy kozím mliekom. [**Excretion of the virus of tickborne encephalitis in goats' milk.**]—*Vet. Čas.* **6**, 177-183. [In Slovak. English, French, German and Russian summaries.] 1051

In an attempt to demonstrate the possibility of transmission by the alimentary route, of tickborne meningo-encephalitis isolated from a human patient, the virus was injected s/c into 4 goats and recovered by i/p inj. into mice from milk and blood, but not from faeces and urine, 2-7 days later. Identity of the virus was proved by cross neutralization tests. Highest virus concentration in blood was 24 hours after infection, and in milk on the fourth day. Infectivity of milk was also demonstrated by oral administration in mice.—E.G.

WARNER, P. (1957). **The detection of Murray Valley encephalitis antibodies in hens' eggs.**—*Aust. J. exp. Biol. med. Sci.* **35**, 327-333. [Author's summary modified.] 1052

Small doses of the virus infected 12 two-year-old hens, producing viraemia in all except one, and serum neutralizing antibodies in all. The antibodies persisted unchanged for more than 14 months. Antibodies of about the same strength occurred in yolks from the eggs of all the hens throughout the same period. Neutralization indices were not markedly high and a method for increasing the certainty of detecting neutralizing antibodies in yolks is described. The

results show that the detection of neutralizing antibodies in hens' eggs may be applied to the study of the epidemiology of Murray Valley encephalitis virus.

HÖRMAN, Š. (1957). Poznatky o vírusovom zápale dýchacích ciest u koní v topolčianskom zrebčine. [A respiratory virus disease (epidemic cough) in a stud in Slovakia.]—*Vet. Čas.* 6, 124-132. [In Slovak. French, German and Russian summaries.] 1053

Epidemic cough was diagnosed in over 50% of horses in a stud. In the majority of horses the disease took a mild course. Procaine-penicillin with or without sulphonamides was used in horses which had prolonged fever during the initial stage of the disease and in those with fever relapses. There were no losses. Differential diagnosis and control measures were discussed.—E.G.

ARAKAWA, S., KANEKO, T., SEKI, T. & MUTO, S. (1957). Experimentelle Studien über das Virus der infektiösen Anämie der Pferde II. Mitteilung: Ultrafiltration und elektronenoptische Untersuchungen des in weissen Mäusen fixierten Virus. [Experimental studies of the virus of equine infectious anaemia. II. Ultrafiltration and electron microscopy of mouse-adapted virus.]—*Yokohama med. Bull.* 8, 48-55. [In German.] 1054

The virus of equine infectious anaemia adapted to the brain of young mice [V.B. 23, 2825] was similar in size to naturally occurring virus, namely 20-60 m μ .—R.M.

HAIG, D. A., MCINTOSH, B. M., CUMMING, R. B. & HEMPSTEAD, J. F. D. (1956). An outbreak of horsesickness, complicated by distemper, in a pack of foxhounds.—*J. S. Afr. vet. med. Ass.* 27, 245-249. 1055

The disease affected 30 of 50 dogs. The symptoms varied in severity but were similar to those described by Theiler, Bevan and Piercy. The peracute form was observed in one case; four dogs died from the acute form after a week's illness with fever, diarrhoea, pharyngitis and coughing; two had fits shortly before they died; the rest showed similar symptoms in a milder form and all except three recovered. P.M. findings included pulmonary oedema, hydrothorax, enlargement of the spleen, extensive haemorrhage, and enteritis. A virus isolated from one fatal case was identified, by neutralization tests, as the African horsesickness virus; antibodies to this virus were demonstrated in 19 dogs, known to have been affected. The

source of the disease is considered to have been infected horseflesh. It is stated that an atypical strain of distemper virus was isolated from the brain of one dog with nervous symptoms.

—T.E.G.R.

MARES, R. G. (1957). Lapinised rinderpest virus.—*Vet. Rec.* 69, 981. 1056

It is stated that repeated passage changes the virulence of lapinized rinderpest virus for rabbits; reactions in cattle appear to be unchanged. A report on these findings is in preparation.—T.E.G.R.

MOLL, T. & FINLAYSON, A. V. (1957). Isolation of cytopathogenic viral agent from feces of cattle.—*Science* 126, 401-402. 1057

Groups of cattle totalling 28 calves and 2 pregnant cows housed over a period of 4 months in an experimental barn became ill with temperatures of 104° to 106°F., some with cough and some with nasal exudate. The 2 cows aborted. A viral agent recovered from faeces was cytopathogenic for bovine kidney cells grown *in vitro*, producing changes characterized by focal rounding and shrinking of cells in the culture within 12-24 hours. These changes could be prevented by serum from convalescent calves, in 1:10 dilution. The virus passed a membrane with average pore size 0.05 to 0.08 μ , but not one of average pore size 0.01 to 0.05 μ ; its aetiological significance has not been established.

—E.V.L.

ABDUSSALAM, M. (1957). Contagious pustular dermatitis. II. Pathological histology.—*J. comp. Path.* 67, 217-222. 1058

The skin response of sheep to C.P.D. virus consists of a proliferation and reticular degeneration of epidermal cells leading to necrosis accompanied by the infiltration of the corium with polymorphonuclear and mononuclear inflammatory cells. In the course of degeneration, globular structures containing a fair amount of chromatinic material are formed in the cytoplasm, but they disintegrate as the cell approaches the surface in keratinization. The nucleolus is enlarged and frequently surrounded by a halo of clear space. This detailed examination of the nuclear and cytoplasmic changes gives further evidence of similarity of C.P.D. to the classical pox diseases.—E.V.L.

DELEZ, A. L., GUSTAFSON, D. P. & LUTTRELL, C. N. (1957). Some clinical and histological observations on scrapie in sheep.—*J. Amer. vet. med. Ass.* 131, 439-446. [Authors' summary modified.] 1059

Clinical signs characteristic of scrapie were

observed in 20 sheep from 19 flocks in Indiana. Histological examination of the c.n.s. revealed vacuolated neurones, particularly in the medulla, of 17 of the 20 animals. However, equally prominent vacuolated neurones were found in the brains of normal adult sheep. No other histological abnormalities were found in the c.n.s. of either normal or affected animals. Muscular dystrophy was found regularly in certain muscles of the hindlegs, extrinsic muscles of the eyes, and cutaneous muscles of the forehead in each of the 3 affected sheep studied. These superficial lesions could be used as an aid in the clinical diagnosis of the disease.

GÜRTÜRK, S. (1957). Elektronenmikroskopische Untersuchungen am Schafabortvirus. [**Study of the virus of ovine abortion by electron microscopy.**]—*Berl. Münch. tierärztl. Wschr.* **70**, 447-449. [English summary.] **1060**

The virus was found to vary in shape and size depending on the method of preparation. The smallest particles observed were 125 m μ in diameter. The results are compared with the histological observations reported by Stamp (1951) [*V.B.* **22**, 998].

WEINBREN, M. P., WILLIAMS, M. C. & HADDOW, A. J. (1957). **A variant of Rift Valley fever virus.**—*S. Afr. med. J.* **31**, 951-957. **1061**

A virus isolated from *Aedes* mosquitoes in Uganda was thought to be a strain of Rift Valley fever virus because it produced liver lesions in mice. Attempts to neutralize the virus with potent RVF immune sera failed, as did further attempts with immune sera to 12 other viruses. The virus produced a characteristic pattern of behaviour in adult mice when inoculated intracerebrally: there was hyperactivity followed by obsessional eating of any available material; the mice often clawed their own throats or bit their limbs, and death was accompanied by convulsions. On selective intraperitoneal passage of liver or blood, a viscerotropic type of virus was obtained; cross-neutralization tests against RVF virus showed a quantitative reciprocal cross, from which it appeared that they were different strains of the same agent. This was supported by complement-fixation tests. Passage of the viscerotropic-adapted virus through mosquitoes resulted in its return to the neurotropic type; a similar tendency for RVF virus to adapt rapidly to a neurotropic variant was observed when passaged through a local rodent, *Arvicanthis abyssinicus nubilans*. The authors therefore suggested that this virus was a variant of the classical RVF virus, the

changes having been brought about by local conditions; other types of variation might consequently occur elsewhere.—E.V.L.

BROWN, R. D., SCOTT, G. R. & DALLING, T. (1957). **Persistence of antibodies to Rift Valley fever in man.**—*Lancet* **273**, No. 6990. 345. **1062**

A person accidentally infected in a laboratory in England with Rift Valley fever virus had no further contact with the virus but 25 years later neutralizing antibodies were detected in his serum. The serum was titrated against 250 LD₅₀ of R.V.F. virus in mice, using 10 mice per dilution of serum. The titre of the serum, expressed as the reciprocal of the 50% neutralizing dilution, was 10^{1.8}.—E.V.L.

KALIKIN, B., DJETVAJ, M. & LJUJIĆ, A (1957). Imunoprofilaksa svinjske kuge iv zaštita prasadi cepljenjem krmača lapiniziranim virusom. [**Prevention of swine fever in piglets by immunization of the dam with lapinized virus.**]—*Vet. Glasn.* **11**, 337-341. [In Croat.] **1063**

Immunity to swine fever in piglets from sows which had been immunized with lapinized virus at the time of insemination was of a markedly shorter duration than that produced with serum-virulent virus, described previously [*V.B.* **25**, 4037].—E.G.

MAYR, A. (1957). Die Diagnose der ansteckenden Schweinelähmung (Teschener Krankheit) mit Hilfe des Neutralisationstestes in der Gewebekultur und die Bildung, Verweildauer und Ausscheidung von virusneutralisierenden Antikörpern im Verlaufe einer Erkrankung und bei stummen Infektionen. [**Diagnosis of Teschen disease in the pig with the help of a neutralization test in tissue culture, and the formation, persistence and elimination of virus-neutralizing antibodies in the course of the disease and in latent infections.**]—*Zbl. VetMed.* **4**, 613-632. [English, French and Spanish summaries. English summary modified.] **1064**

After oral infection of piglets with Teschen disease virus, neutralizing antibodies were demonstrated in the blood towards the end of the incubation period and at the first signs of paralysis. The titre rose as the disease progressed and persisted long after recovery. Antibodies were also found in piglets with latent infection. The neutralization test for titrating antibody in tissue culture was reliable. Culture virus, of no matter how many passages, was regularly

neutralized by immune sera and this was readily demonstrated *in vitro*. The results form the basis of a diagnostic test for porcine encephalomyelitis. Their significance in the pathogenesis of the disease is discussed.

BOURDIN, P., ATANASIU, P., LÉPINE, P., JACOTOT, H. & VALLÉE, A. (1957). Culture du virus de Teschen sur cellules épithéliales de rein de porc en couche monocellulaire. [**Propagation of Teschen disease virus in monolayer cultures of pig epithelial kidney tissue.**]—*Ann. Inst. Pasteur* **93**, 581-591. [English summary modified.] **1065**

The virus was cytopathogenic in monolayer cultures of pig epithelial kidney tissue. Alternate passages in brain and tissue culture did not modify this cytopathogenicity and the pathogenicity for piglets was unchanged.

HARDING, J. D. J., DONE, J. T. & KERSHAW, G. F. (1957). A transmissible polio-encephalomyelitis of pigs (Talfan disease).—*Vet. Rec.* **69**, 824-832. **1066**

Several recorded outbreaks of this disease in England have affected only piglets between 6 and 10 weeks of age. Clinical signs were incoordination leading sometimes to paralysis of the legs, and coughing; temperature and appetite were normal. Pathological examination revealed lesions of the brain and spinal cord. The disease could be transmitted to young piglets by the intracerebral or epidural injection of filtrates of emulsions from the brains of diseased piglets; the agent was very probably a virus; it resists both penicillin and streptomycin, and freezing at -15°C . for at least 94 days.—E.V.L.

SMITH, B. F. (1956). The distemper complex. *N. Z. vet. J.* **4**, 71-84. Discussion: p. 85 **1067**

S. outlined diseases which may confuse the diagnosis of distemper. These include "hard pad" disease, canine virus hepatitis, leptospirosis, bacterial infection, toxoplasmosis and lead poisoning. Attention was also drawn to the possible existence of a virus encephalitis, the causal agent of which is apparently distinct from that of distemper, and also to a virus pneumonia in dogs. A detailed account of the different methods of distemper prophylaxis is given. The safety and efficiency of various types of vaccines are discussed.—W. MANSI.

I. ROCKBORN, G. (1957). Viraemia and neutralizing antibodies in experimental distemper in dogs.—*Arch. ges. Virusforsch* **7**, 168-182. [In English.] **1068**

II. ROCKBORN, G. (1957). Viraemia and neutralizing antibodies in naturally acquired

distemper in dogs.—*Ibid.* 183-190. [In English.] **1069**

I. Blood samples were taken from dogs 2, 4, 6, 8 and 10 days after experimental infection. Virus was demonstrable in the blood on the 4th and 6th days but not on the 8th and 10th days. Neutralizing antibodies were demonstrable on the 6th day and reached a maximum at 30-40 days. The titre then decreased until 2 months after infection and remained at the same level for a further period of 3 months.

II. Virus was demonstrable in the blood of dogs on the 4th and 6th days after natural infection. Neutralizing antibodies were first demonstrable on the 6th day and there was a sharp rise in titre up to the 12th day. In 2 dogs the virus was still demonstrable on the 14th day and the rise in antibody titre was slower. Both these animals died and it is considered that there is a correlation between the persistence of virus in the blood and the severity of the disease.

—T.E.G.R.

LUTSKY, I. (1957). Intracerebral inoculation of distemperoid virus: I. Technic and possible indications in canine distemper encephalitis. *N. Amer. Vet.* **38**, 339-341 & 343. [Author's summary modified.] **1070**

A method for the intracerebral inoculation of ferret modified live distemper virus is described. Broader clinical evaluation of this technique in the prevention and treatment of canine distemper encephalitis is suggested, and the possible mode of action discussed.

SASAKI, N., NAKAI, M., IWAMOTO, I., KONISHI, S. & IKEGAMI, T. (1956). [Studies on infectious hepatitis of dogs. II. The distribution of the disease in Japan, and its immunization.]—*Jap. J. vet. Sci.* **18**, 113-118. [In Japanese. Abst. from English summary.] **1071**

Of 329 sera from dogs in various parts of Japan, 76 reacted to the c.f. test for canine virus hepatitis. Incidence varied, and in some districts one third of sera examined were positive. A vaccine was prepared from 10 or 20% emulsion in saline solution of liver from an infected dog. 0.2% formaldehyde was added to the emulsion and the mixture was kept at 25°C . for 10 days or more. Dogs inoculated with 3-5 ml./kg. body wt. of the 20% emulsion apparently resisted challenge with 10,000 m.l.d., of virus 21 days after inoculation.—R.M.

LEE, D. J., DYCE, A. L. & O'GOWER, A. K. (1957). Blood-sucking flies (Diptera) and myxomatosis transmission in a mountain

environment in New South Wales.—*Aust. J. Zool.* **5**, 355-401. [Author's summary modified.] **1072**

The possible vectors of myxomatosis in a typical mountain environment in New South Wales were investigated. The disease was established in an isolated population of rabbits and its fluctuations followed for two and a half years. Of over 60 species of blood-sucking flies encountered, 9 species of Culicidae, 2 of Simuliidae, 3 or Ceratopogonidae, and 1 of Tabanidae were shown to feed on rabbits. Two recoveries of myxomatosis virus have been made from mixed collections of *Aedes queenslandis* and *A. alboannulatus*. The relative importance of the species known to attack rabbits is discussed in relation to the transmission and maintenance of the disease. Information on host preferences and the feeding, resting, and movement of adults is given. Possible factors influencing the autumn incidence of the disease are discussed, and further means suggested of exploiting myxomatosis towards the control of rabbits in specific environments.

PEREIRA, H. G. & KELLY, B. (1957). Latent infection of rabbits by adenovirus type 5.—*Nature, Lond.* **180**, 615-616. **1073**

Six rabbits were inoculated i/v with $10^{9.2}$ 50% tissue culture doses of the prototype strain of adenovirus type 5. Individual rabbits were killed 3, 6, 13, 20, 27, 41 and 55 days later and the spleens removed; part of the tissue was minced and maintained in spleen tissue cultures and the remainder prepared in spleen suspensions in broth-saline. The virus was recovered from only one of the spleen suspensions, that of the rabbit killed after 3 days. Complement-fixing and neutralizing antibodies had not been demonstrated in the sera of rabbits collected 3 days after inoculation, but were detected at 6 days and reached maximum levels at 13-20 days after inoculation. The virus was, however, recovered from each of the spleen tissue cultures after varying periods of incubation. The findings demonstrated the persistence of adenovirus type 5 in rabbit spleens for at least 2 months following inoculation; the methods described may represent a useful experimental model for studies on latency and unmasking of adenoviruses.

—E.V.L.

KRAFT, L. M. (1957). Studies on the etiology and transmission of epidemic diarrhoea of infant mice.—*J. exp. Med.* **106**, 743-755. [Author's summary modified.] **1074**

Transmission experiments have shown that epidemic diarrhoea of infant mice is infectious

and communicable. Cage to cage spread can take place by the air-borne route. The agent appears to be a fairly heat-resistant virus that can be serially transferred and that is neutralized by specific hyperimmune antiserum from rabbits. Mice are susceptible to it by the oral route from at least the 3rd day after birth to the 10th or 11th day. Thereafter they appear to become resistant. The shortest incubation period observed has been 40 hours from the time of feeding infective material; the longest period could not be ascertained under the conditions of test. The differentiation of this virus from others is discussed briefly. [See also *V.B.* **19**, 474 & 475; **27**, 3386.]

ŠKODA, R. & ŽUFFA, A. (1957). Imunizačná účinnosť inaktivovaných vakcín proti Newcastle'skej chorobe pripravených s lipidnými adjuvanciami a s hydroxydom alumínia. [Immunogenic evaluation of adjuvant Newcastle disease vaccines.]—*Vet. Čas.* **6**, 117-123. [In Slovak. English French, German and Russian summaries.] **1075**

Newcastle disease vaccine, prepared from formalized virus of low virulence (Lederle strain) by adsorption on aluminium hydroxide, failed to produce satisfactory immunity even in doses of 1 ml. I/m injection of 0.25 ml. of vaccine prepared from the same strain to which after formalization liquid paraffin and lanolin adjuvants instead of aluminium hydroxide had been added, protected chicks against s/c challenge with one million LD_{50} of virulent virus.—E.G.

ADAMS, W. R. & PRINCE, A. M. (1957). An electron microscopic study of incomplete virus formation. Infection of Ehrlich ascites tumor cells with "chick embryo-adapted" Newcastle disease virus (NDV).—*J. exp. Med.* **106**, 617-626. [Authors' summary modified.] **1076**

The morphological changes occurring in Ehrlich ascites tumour cells infected with chick embryo-adapted N.D.V. were studied by phase, conventional light, and electron microscopy. Intracytoplasmic inclusions appeared 2 to 4 hours after infection and progressively increased in size and numbers until cytolysis occurred. No significant changes in mitochondria or other cell organelles were detected during the initial period of inclusion development. The inclusions were composed of a multilaminated shell, probably derived from the agranular reticulum of the tumour cell, surrounding an inner core packed with dense particles measuring 3 to 14 $m\mu$ in diameter. These particles were tentatively identified as the newly synthesized "incomplete

virus" which had been previously demonstrated by fluorescent antibody techniques. The possible role of the inclusions is discussed.

BANKOWSKI, R. A., HILL, R. W. & RAGGI, L. G. (1957). Response of eight-week-old susceptible chickens to Newcastle disease (B-1) and infectious bronchitis viruses. — *Avian Diseases* 1, 195-207. [Authors' summary modified.] 1077

Vaccinating 8-week-old pullets under controlled field conditions demonstrated the influence of age and passive immunity upon immunogenicity of a commercially available B-1 strain of Newcastle disease vaccine, administered in the drinking water, and infectious bronchitis vaccine, administered intranasally.

SEVOIAN, M. & LEVINE, P. P. (1957). Effects of infectious bronchitis on the reproductive tracts, egg production, and egg quality of laying chickens.—*Avian Diseases* 1, 136-164. 1078

About a quarter of birds with infectious bronchitis produced eggs that were misshapen, soft-shelled, or containing white granular masses of albumen. Many of the changes in the reproductive tract were not specific for infectious bronchitis, occurring also in healthy birds deprived of food and water. Lymphocytic infiltration in the oviduct was more common in infected than in starved birds.—R.M.

ATHERTON, J. G. & ANDERSON, W. (1957). Propagation in tissue culture of the virus of infectious laryngotracheitis of fowls.—*Aust. J. exp. Biol. med. Sci.* 35, 335-346. [Authors' summary modified.] 1079

The virus was successfully grown in cultures of chick-embryo tissues. It was recovered from ground culture tissues, but not from the fluid bathing them. The virus produced a cytopathogenic effect which was neutralized by specific antiserum. Intranuclear inclusions were demonstrated in culture of respiratory epithelial cells infected with a freshly isolated strain of the virus.

CONTINI, A. (1957). Su di un caso della malattia di Giroud e Groulade del cane. [Infection by a psittacosis virus in a dog.]—*Atti Soc. ital. Sci. vet., Perugia*, 1956 10, 736-740. [English and French summaries.] 1080

An account of a disease in a 3-year-old dog. The condition is considered to be similar to that described by Giroud & Groulade, 1954 [see *V.B.* 25, 2360].—T.E.G.R.

ROTT, R. & ROOTS, E. (1957). Untersuchungen über die Vermehrung des Psittakosevirus im entembryonierten Hühnerei. I. Mitteilung: Verlauf des Infektiositätstiters in der Nährlösung. [Multiplication of psittacosis virus in de-embryonated eggs. I. The infective titre in the medium.]—*Zbl. VetMed.* 4, 713-720. [English, French and Spanish summaries. English summary slightly modified.] 1081

Two strains of psittacosis virus were cultivated in the chorio-allantois of 16 to 17-day eggs from which the embryos had been removed. The titre in the medium fell progressively for the first hours after inoculation. After a latent period of 24 hours it rose rapidly and reached high values after another 24 hours, at which time the experiments ended. The virus behaved similarly in the embryonated egg. Under the electron microscope the purified medium within the egg showed, in addition to elementary bodies, large flattened structures up to 1200 m μ , which mostly showed spherical masses within them. The results so far have not finally elucidated the nature of these "large forms".

SANDERS, F. K. (1957). Virus titration in cell suspension cultures.—*Proc. R. Soc. Med.* 50, 911-915. 1082

A technique was described whereby the progress of infection in a cell suspension culture could be followed directly and the quantity of virus present estimated. It was found that the staining of cells of infected cultures with eosin was correlated with the growth and release of virus from infected cells; the basis of the test was to infect a suspension of cells with the virus and after a time sufficient for one cycle of multiplication (10 to 14 hours) to stain the cells with eosin and count both the total number of cells and the proportion which remained unstained. From these figures the virus content of the suspension could be calculated. There was close agreement between the results obtained by this method and those of haemagglutination titrations of the same material.—E.V.L.

ALERAJ, Z., AUDI, S. & TOPOLNIK, E. (1956). Bolest koza u Dalmaciji nalik na "Heartwater disease." [A disease in goats in Dalmatia resembling heartwater.]—*Vet. Arhiv.* 26, 111-119. [In Croat. English and German summaries.] 1083

A disease resembling heartwater and causing high mortality in goats, but also seen in a somewhat milder form in sheep [*V.B.* 27, 790] and cattle in Dalmatia, was described. In goats there was weakness of the hindquarters, high pulse

rate and arrhythmia, and increased temp. P.M. a characteristic feature was the presence of large amounts of exudate in the thoracic and abdominal cavity and in the pericardium. Spleen and heart were enlarged, there was degeneration of parenchymatous organs, and intestinal catarrh. Bacteriological examination of organs was negative. In kidney cells and in the endothelium of the caudal vena cava, small coccoid bodies, resembling rickettsia, occurring singly or in aggregates, were demonstrated. Similar formations were also seen in spleen and brain. Chick embryos died within 5-6 days after infection with spleen material from dead goats. The disease was reproduced with blood and spleen material in four goats, but not in rabbits, g.pigs and mice, although coccoid bodies were demonstrable. The causal organism of the disease was believed to

be a rickettsia, similar to that causing heart-water. The role of ticks in the transmission of the disease was discussed.—E.G.

NIŽNÁNSKY, F. & GMITTER, J. (1957). Diagnostická hodnota alergickéj skúšky pri koxielóze oviec. [Diagnostic value of the allergic test in ovine Q fever.]—*Vet. Čas.* 6, 192-198. [In Slovak. English, French, German and Russian summaries.] 1084

In a flock in which about 40% of sheep had yielded positive c.f. reactions for Q fever, intradermal and intrapalpebral tests with 2 ml. of *R. burneti* antigen were inconclusive. In g.pigs, however, infected following immunization, the intradermal test was satisfactory. [A German version of this paper was published in *Arch. exp. VetMed.* 11, 437-441.]—E.G.

IMMUNITY

ORTEGA, L. G. & MELLORS, R. C. (1957). Cellular sites of formation of gamma globulin.—*J. exp. Med.* 106, 627-640. [Abst. from authors' summary and conclusions.] 1085

The findings indicate that γ -globulin is formed in the germinal centres of lymph nodes and in the cytoplasm of mature and immature plasma cells of two types—those with and those without Russell bodies. The germinal centre cells that synthesize γ -globulin have been designated "intrinsic" cells to distinguish them from the medium and large lymphocytes and from

the primitive reticular cells that occur elsewhere and do not produce γ -globulin. Unlike the plasma cells, which function as individual units, the intrinsic cells apparently form γ -globulin only when they are arranged in discrete aggregations. The function, the blood supply, and the systematic cellular arrangement of germinal centres, together justify the postulate that they are miniature organs of internal secretion of γ -globulin. The cells found to form γ -globulin appear to be identical with those previously shown to form specific antibody in response to a variety of antigens in the experimental animal.

See also absts. 977-979 (TB.); 982 (listeriosis); 990-1016 (brucellosis); 1017 (leptospirosis); 1026 (bovine contagious pleuropneumonia vaccine); 1028 (porcine eperythrozoonosis); 1037 (toxoplasmosis); 1039-1040 (F. & M. disease); 1041-1042 (Aujeszky's disease); 1046-1047 (fowl pox vaccines); 1050 (beta-propiolactone virus vaccines); 1052 (Murray Valley encephalitis antibodies in eggs); 1062 (Rift Valley fever); 1063 (swine fever); 1064-1065 (Teschen disease); 1068-1070 (distemper); 1071 (canine virus hepatitis); 1075-1077 (Newcastle disease); 1084 (Q fever); 1106 (ovine strongylosis); 1125 (Dictyocaulus); 1277 (drop c.f. test); 1287 (book, immunization against TB.).

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

MCCOSKER, P. J. & OSBORNE, H. G. (1957). The systemic effect of aldrin on the sheep body louse (*Damalinia ovis*).—*Aust. vet. J.* 33, 330-331. 1086

Two small trials were carried out on louse infested sheep using a commercial 40% aldrin miscible oil. In the first trial the formulation was given subcutaneously to two sheep at a rate of 20 mg./kg. body wt., one sheep at 15 mg. per kg., and one at 25 mg./kg. Two weeks later no living lice were found on any of the treated sheep; two untreated sheep remained infested; there was a marked local reaction. In the second trial the formulation was rubbed on a patch 2 inches in diameter on the poll, at a rate of 40 mg. per kg. on 2 sheep, and 50 mg./kg. on one. Five weeks later no living lice were found; un-

treated sheep remained infested. Sheep tolerated subcutaneous or percutaneous application better than oral administration.—N. P. H. GRAHAM.

BRANDER, G. C. (1957). The movement of dieldrin in the sheep's fleece.—*Aust. vet. J.* 33, 247. 1087

Thirty-nine Merino ewes heavily infested with lice and carrying nine months' wool were sprayed with 0.125% dieldrin at 15 lb. per square inch as a fine spray. The consumption was 2 pints per sheep. Seven sheep, examined after 10 days, all carried live nymphs; 4 of 5 sheep, examined after 38 days, carried no lice; a single nymph was found "under cover of a skin/wool abscess" on the fifth sheep.

—N. P. H. GRAHAM.

WRIGHT, P., PAYNE, K. & SHANAHAN, G. J. (1957). A preliminary evaluation of insecticides and methods of application for the prevention of body strike in sheep.—*Aust. vet. J.* **33**, 227-229. 1088

SKERMAN, K. D. & PRYOR, W. J. (1957). Prevention of breech strike in Merino ewes by jetting with dieldrin and diazinon.—*Ibid.* **230-232**. 1089

I. A screening-test to compare the efficiency of diazinon, dieldrin, aldrin and BHC for protecting sheep against body strike is described. Several concentrations of each insecticide were used on test groups of 7 Merino sheep. The insecticide was either "jetted" on to the back or applied as a light surface spray. The treated sheep were challenged by implants of larvae after 16, 20 and 28 weeks. Low volume sprays of all insecticides at 0.5% failed to give adequate protection at 16 weeks. "Jetting" provided complete protection: for 28 weeks (0.1% diazinon); 20 weeks (0.5% BHC); 16 weeks (0.05% diazinon, 0.1% dieldrin, 0.5% aldrin).

II. Three field trials, using sheep of different ages in groups numbering nearly 200 or over, were conducted to determine protection against breech strike by "jetting" with dieldrin and diazinon at varying concentrations. The incidence of strike in untreated control groups over the trial period of 12 weeks varied from 6.8 to 25.3%. A concentration of 0.025% dieldrin was compared with 0.02% and 0.01% diazinon, and 0.05% dieldrin was compared with 0.04% and 0.02% diazinon. In all trials the results with dieldrin were slightly inferior to those with equivalent concentrations of diazinon and generally slightly superior to those with half the concentration of diazinon. Protection lasted 6-9 weeks. The period of complete protection was 6-7 weeks for 0.02% diazinon and 0.025% dieldrin.—N. P. H. GRAHAM.

CHLÁDECKÝ, F., KUBELKA, V. & TAMCHYNA, J. (1957). Zábřana strečkovitosti. [Control of warbles.]—*Vet. Čas.* **6**, 89-99. [In Slovak. English, French, German and Russian summaries.] 1090

In a field experiment lasting 3 years, 10,000 cattle were treated with a D.D.T.-B.H.C. preparation, which was applied to the skin for the control of warbles. A marked reduction in the number of warbles per animal and in the number of infected cattle was claimed.—E.G.

ROSENBERGER, G. (1957). Ein neuer Weg der Dasselbekämpfung—erfolgreiche Behandlung der Rinder gegen die Wanderlarven. [New method of controlling the warble fly: killing

the migrating larvae in cattle.]—*Dtsch. tierärztl. Wschr.* **64**, 441-445. 1091

Two groups of 152 and 200 young cattle, in 2 different districts, were treated by mouth between November and January with "Neguvon" [see *V.B.* **27**, 1808]. Some were given a single dose of 75-100 mg./kg. body wt. and others 3 such doses at monthly intervals. In the following summer the average number of warbles per animal in the 2 groups was 3.5 and 0.4 against 28.4 and 12.7 in controls. The greatest reduction was observed in the animals treated 3 times. It is considered that between November and January young cattle should receive 3 monthly doses, each of 75-80 mg./kg. body wt. in tablet form. Cows, however, should be dressed in the spring and summer with 2% "Neguvon" soln.—M.G.G.

NEEL, W. W. (1957). The effectiveness of new repellents for the control of horn flies on dairy cattle.—*J. econ. Ent.* **50**, 502-503. 1092

In a herd of 20 cattle 5 were sprayed once a week for 4 weeks with methoxychlor, 5 with methoxychlor plus butoxy polypropylene glycol, and 5 with methoxychlor plus di-n-butyl succinate. Fewer *Siphona irritans* were counted on these animals than on the 5 remaining, untreated animals.—M.G.G.

ENIGK, K. & DÜWEL, D. (1957). Feststellung und Behandlung des Linguatula-Befalles beim Hund. [Diagnosis and treatment of *Linguatula infestation* in dogs.]—*Dtsch. tierärztl. Wschr.* **64**, 401-403. 1093

In a dog with *L. serrata* infestation the ova could not be demonstrated in the nasal secretion, but were demonstrated in faecal samples after these had been suspended for 3-6 hours in 5% potassium hydroxide. This dissolved the sticky envelope and allowed the ova to float to the surface of the flotation medium. Treatment with contact insecticide aerosols is recommended.

—M.G.G.

NORRIS, K. R. (1957). Strategic dipping for control of the cattle tick, *Boophilus microplus* (Canestrini), in south Queensland.—*Aust. J. agric. Res.* **8**, 768-787. [Author's summary modified.] 1094

In the spring and early summer of 1953, three herds were dipped in acaricides at intervals such that few or none of the ticks (*B. microplus*) attaching to the animals between dippings reached maturity. This was continued until the tick larvae hatching in the pastures in spring were greatly depleted in numbers, but was discontinued before they were exterminated, to

avert the danger of the cattle losing their immunity to redwater fever. Throughout the rest of the summer and the early autumn these cattle were lightly infested, and required dipping relatively infrequently. On the other hand, on a property where early, intensive dipping had not been carried out, very heavy infestations of ticks were present throughout the summer and autumn in spite of monthly dippings. This procedure of relating times of dipping to the ecology of the tick has been termed "strategic dipping". In the 1954-55 season, results obtained by intensive spring and early summer dipping were not comparable with those of the 1953-54 season. This appeared to be attributable principally to delayed or relatively ineffective dippings at critical times. Effective application of strategic dipping, as during the 1953-54 season, would reduce the need for acaricidal treatment of the cattle in the summer months when dipping is likely to be delayed by rainy periods.

NORMAN, M. J. T. (1957). **Weight responses to tick control and phosphate supplementation in beef cattle at Katherine, N.T.**—*J. Aust. Inst. agric. Sci.* **23**, 344-345. [Author's summary modified.] **1095**

Young Shorthorn steers on native pasture in the Northern Territory, have shown marked responses to tick control and to phosphate supplements. Live-weight gains over a 6-month summer rainfall period were increased by over 200% by tick control and by 35% with a phosphate supplement fed at fortnightly intervals.

MYKYTOWYCZ, R. (1957). **Parasitic habit of the rabbit mite, *Cheyletiella parasitivorax* (Megnin).**—*C. S. I. R. O. Wildlife Res.* **2**, 164. **1096**

Although evidence is presented to show that *C. parasitivorax* is a true parasite of the rabbit, feeding on the skin of its host, no gross dermal

lesions attributable to the species have been seen among hundreds of rabbits examined.

—A. CULEY.

BRANDER, G. C. (1957). **Recent advances in the control of the ectoparasites of sheep.**—*Aust. vet. J.* **33**, 318-322. Discussion: pp. 323-327. **1097**

This article reviews the commercial development of insecticides, the use of aldrin, dieldrin, and to a lesser extent diazinon, for the control of sheep parasites, and some methods of application of insecticides. To be accepted as an "advance" a new insecticide or method must have an advantage in efficiency, safety or ease of application: the discussion on this paper treats Australian experiences in the use of the newer insecticides on this basis.

—N. P. H. GRAHAM.

CHADWICK, L. E. (1957). **Progress in physiological studies of insecticide resistance.**—*Bull. World Hlth Org.* **16**, 1203-1218. [French summary. Author's synopsis modified.] **1098**

This study deals first with recent investigations on the mode of toxic insecticidal action of D.D.T., lindane and other chlorinated hydrocarbons, pyrethrins and related chemicals, and organo-phosphates, and secondly with resistance mechanisms to these insecticides. It is felt that, although the physiological mechanisms of resistance are becoming understood, the gaps in present knowledge, the types of insecticide to which resistance is developing, and the number of medically important species involved lead inevitably to the conclusion that the general outlook for insect control is deteriorating. What is now needed is not continuation of the present empirical approach to the problem of resistance but intensification of basic studies of the biology, ecology and physiology of the insect species concerned to provide a rational foundation for alternative control measures.

See also absts. 1051 (tick-borne encephalitis); 1061 (Rift valley fever virus from mosquitoes); 1072 (arthropod vectors of myxomatosis); 1288 (book, bird parasites).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

I & II. WINTERHALTER, M. & DELAK, M. (1956). **Parenteralna aplikacija tetraklormetana (carbonei tetrachloridum). IV. Supkutana aplikacija tetraklormetana kod konja. V. Supkutana aplikacija tetraklormetana kod goveda. [Parenteral application of carbon tetrachloride. IV. Subcutaneous application in horses. V. Subcutaneous application in cattle.]**—*Vet. Arhiv.* **26**, 299-306 & 307-312.

[In Croat. English and French summaries.] **1099**

I. Because of severe necrotic reaction produced by a 3:1 mixture of CCl_4 and medicinal paraffin, injected s/c into 13 horses in doses of 0.1 ml./kg. body wt., this method of application was found unsuitable for the treatment of equine fascioliasis.

II. Live liver flukes were found in the bile

ducts of cows killed 4–15 days after s/c application of 0.1–0.3 ml./kg body wt. of a 3:1 mixture of CCl_4 and either liquid paraffin or sunflower oil. There was extensive necrosis at the site of injection. [See also *V.B.* 26, 2934.]—E.G.

I. KÓŇA, E. (1957). Elektroforetické vyšetřování bílkovinových frakcí krevního séra a peritoneálního i perikardiálního exsudátu u oviec, chorých na fasciolózu. [Electrophoretic examination of protein fractions of serum and peritoneal and pericardial exudate in sheep with fascioliasis.]—*Vet. Čas.* 6, 146–150. [In Slovak. English, French, German and Russian summaries.] 1100

II. KÓŇA, E. (1957). Elektroforéza krevního séra oviec, chorých na fasciolózu. [Serum electrophoresis in sheep with fascioliasis.]—*Sborn. čes. Akad. zemědělsk. Věd. Vet. Med.* 30, 159–164. [In Slovak. English, German and Russian summaries.] 1101

I. Samples of serum, peritoneal and pericardial fluid from 36 sheep with fascioliasis were examined by paper electrophoresis. The protein fraction in serum and peritoneal fluid was about the same but in the pericardial fluid there was a slight increase in albumin and decrease in gamma-globulin.

II. Examination by paper electrophoresis of the protein fraction in serum samples from 37 sheep, 1–2 years old, with anaemia due to heavy liver fluke infestation, revealed a marked increase in relative gamma-globulin values, a slight increase in alpha-globulins, and a reduction in albumins.—E.G.

ANON. (1957). Liver flukes in man.—*Lancet* November 2nd. 882. 1102

Liver fluke infection in man is discussed. An extensive outbreak in eastern France in 1956–57 is ascribed to the ingestion of watercress growing in streams contaminated by cattle. —T.E.G.R.

MANDAHL-BARTH, G. (1957). Intermediate hosts of *Schistosoma*. African *Biomphalaria* and *Bulinus*: II.—*Bull. World Hlth Org.* 17, 1–65. [French summary. Author's synopsis modified.] 1103

This study is an attempt to classify all described species of African *Bulinus* and is based on personal examination of a great number of specimens from many parts of Africa. The variations attributable to age, environment and genetic factors which may be noted in the taxonomic characters are discussed, and some new species and subspecies are established. The distin-

guishing characters, geographical distribution, and synonyms of each recognized species and subspecies are given.

DEOUELL, J. (1957). Problems of *Cysticercus bovis* in general and in frozen meat plants in Abyssinia and Eritrea in particular.—*Refuah vet.* 14, 57–63. [In Hebrew.] [In English: p. 108.] 1104

D. discussed the routine post-mortem technique for the detection of *C. bovis* in beef carcasses, and the different judgments applied in various countries when carcasses are found infected. Factors which must be considered in formulating criteria of judgment, and which account for such differences, are the public health obligations, consumer prejudice, and the economic loss to the owners of condemned animals. Judgments have tended to be less severe since the efficacy of destroying viable cysts by freezing has become established, and frozen beef from countries where *C. bovis* is common is safer in this respect than the fresh unfrozen product. —H. THORNTON.

DE VILLIERS, I. F. (1957). The threat of hydatid disease to the South African citizen.—*S. Afr. med. J.* 31, 700–702. 1105

The spread of hydatid disease in the Union of S. Africa is favoured by the expansion of sheep-farming, the popularity of dogs, especially on sheep farms, the presence of small farms on the outskirts of cities, and the unsupervised slaughter of animals in country towns.—M.G.G.

TURNER, J. H. (1957). Further studies on ovine strongyloidiasis: an attempt to induce passive immunity.—*J. Parasit.* 43, No. 5. Sect. 2. pp. 12–13. [Only abst. given. Abst. from abst.] 1106

Lambs and kids rapidly developed resistance to infection with *Strongyloides papillosus* after exposure for several weeks to small immunizing doses of infective larvae. "Immune" serum from these animals was injected i/v into 4 uninfested lambs in doses of 5, 2.5, 0.5, or 0.1 ml. per lb. body wt. Two control lambs received 5 ml. of normal serum or 5 ml. of physiological saline per lb. body wt. All lambs were then infected percutaneously with 150,000 infective larvae. For 8 weeks no differences were noted between "immunized" and control lambs; and at P.M. examination more worms were recovered from the "immunized" lambs. When infective larvae were incubated at 37°C. in "immune" serum, oral and anal precipitates

formed in about 4 hours. Serum protein changes in infested lambs indicated the production of more than one antibody.

MACKERRAS, M. J. (1957). *Capillaria in the spleen of a rat (Nematoda: Trichuroidea)*.—*Aust. J. Sci.* **19**, 230. 1107

Sections of the spleen of a rat (*Rattus rattus*) captured in New Guinea contained a *Capillaria* sp. It differed from *C. hepatica* and may be a new species.—R. I. SOMMERVILLE.

PODHORSKÝ, J. (1957). Příspěvek k problematice kapillariósy hrabavé drůbeže. [*Capillaria infestation in fowls.*]—*Sborn. čes. Akad. zemědělsk. Věd. Vet. Med.* **30**, 105-134. [In Czech. English, German and Russian summaries.] 1108

Anthelmintics tested against *Capillaria* infestation were, in order of efficacy, aniseed oil, chlorinated hydrocarbons, and phenothiazine. Petrol had no effect. Control measures recommended included rearing of chicks for the first three months of life in cages with wire mesh bottom, destruction of earthworms, general hygiene, adequate nutrition, and isolation of carriers.—E.G.

LUCAS, A. & LAROCHE, M. (1957). Le tétrachlorure de carbone dans la thérapeutique anthelminthique aviaire. II. Son action dans la capillarióse. [*Carbon tetrachloride as an anthelmintic for birds. II. Its action on Capillaria in pheasants.*]—*Rec. Méd. vét.* **133**, 569-575. 1109

Carbon tetrachloride, diluted fourfold in liquid paraffin and added to the food, cured pheasants with severe *Capillaria* infestation. Three daily doses of 0.125 to 0.25 ml. of the drug are recommended, followed by a second course 2-3 weeks later. The same doses are recommended for fowls; and 0.03125 ml. for partridges weighing 200 g.—M.G.G.

HILL, C. H. (1957). *Distribution of larvae of Trichinella spiralis in the organs of experimentally infected swine.*—*J. Parasit.* **43**, 574-577. [Author's summary modified.] 1110

Fifty-five pigs from 61 days to 8 years of age were experimentally infected, at the rate of 400 to 600 larvae per lb. body wt., with encysted larvae of *T. spiralis* contained in ground pork. The pigs were killed 21 to 162 days after infection, and their organs and tissues were ground and artificially digested to recover the parasites. Trichinae were recovered from the following locations, with percentage frequencies given in parentheses: Diaphragm (100), stomach wall (18), testes (15), liver (11), brain, lung, and wall

of the small intestine (9 each), pancreas and aorta (8 each), urinary bladder contents (7), urinary bladder wall (5), heart (2).

DRUDGE, J. H., LELAND, S. E., JR., WYANT, Z. N. & HUTZLER, L. B. (1957). *Field studies with piperazine-carbon disulfide complex against parasites of the horse.*—*J. Amer. vet. med. Ass.* **131**, 231-234. [Authors' summary modified.] 1111

Treatment of 197 sucklings, weanlings, yearlings, and mares with piperazine-carbon disulphide complex at 37.5 mg. per lb. body wt. (0.5 oz. of suspension/100 lb.) under field conditions resulted in the effective removal of both immature and mature ascarids, and small strongyles. At this dose level there was no apparent action against *Strongylus vulgaris* and *Strongyloides westeri*.

WHITLOCK, J. H. & MADSEN, H. (1957). *Notes on further studies of the inheritance of resistance to trichostrongylidosis in sheep.*—*J. Parasit.* **43**, No. 5, Sect. 2, p. 11. [Only abst. given. Abst. from abst.] 1112

In earlier papers the authors reported the existence of a factor for inherited resistance to trichostrongylidosis in sheep. This was named the Violet factor after the ram in which it was first recognized. Further experimentation has not given any evidence that it is anything more than a simple dominant genetic factor.

SHUMARD, R. F. (1957). *The effect of the nematode, Trichostrongylus axei, (Cobbold; 1879) on the utilization and excretion of certain elements.*—*J. Parasit.* **43**, No. 5, Sect. 2, p. 12. [Only abst. given. Abst. modified.] 1113

The consumption and excretion of Na, K, Ca, P, and protein nitrogen in healthy lambs and lambs infested with *T. axei* were studied for 26 days. Infested lambs maintained a high Na level while excretion of the other elements approached and in some cases exceeded consumption.

CIORDIA, H. (1957). *Studies on the effect of X-rays on the infective stage of the nematode Trichostrongylus axei.*—*J. Parasit.* **43**, No. 5, Sect. 2, p. 11. [Only abst. given. Abst. modified.] 1114

Fifteen rabbits, divided into 5 groups of three, were each fed 4,000 infective larvae of *T. axei*. Four groups received larvae previously exposed to 1,000, 2,000, 5,000 or 10,000 roentgen units, and one group received non-irradiated larvae. More worms were recovered from rabbits infected with larvae treated with 5,000r than

from rabbits in other groups. Besides this apparent increase in infectivity, the number of eggs passed per adult worm recovered also increased, although the percentage of larval development, as determined by faecal cultures, was not affected. In a second trial the 1,000r treatment was replaced by a 20,000r treatment. The increase in infectivity of the larvae exposed to 5,000r was again apparent. No larvae reached maturity after exposure to 20,000r. A dose of 10,000r did not have any apparent effect on the larvae.

BRADLEY, R. E. & LEVINE, N. D. (1957). The relation of a two-day pasture rotation system to the acquisition of gastrointestinal nematodes by sheep.—*J. Parasit.* **43**, No. 5. Sect. 2. p. 20. [Only abst. given. Abst. modified.] **1115**

Eleven ewes and 11 lambs were moved every alternate day on to a new strip of fescue-lucerne pasture, the size of the strip being determined by the amount eaten. Three rotations were made, of 50, 42, and 54 days. A control group of 7 ewes and 7 lambs was maintained on a paddock of the same size and character as the "rotated" one. The faecal nematode egg counts of the ewes in both groups remained low. A few strongyle eggs appeared in both groups of lambs after 33 days, the number reaching a peak of 800 eggs per g. in the control lambs after 3 months, and in the experimental lambs a peak of 4,471 e.p.g. after over 4 months. The number then decreased rapidly in both groups. Large numbers of coccidian oocysts (mostly of *Eimeria arloingi*) were in the faeces of both groups of lambs, but were not associated with clinical symptoms. The experimental lambs gained an average of 0.15 lb. daily, and the control lambs 0.23 lb. daily. Pasture utilization was much better on the "rotated" pasture than on the control one.

CIORDIA, H., VEGORS, H. H. & BIZZELL, W. E. (1957). Freezing procedures for greater flexibility in application of the digestive method for post-mortem recovery of cattle nematodes.—*J. Parasit.* **43**, 532-534. [Authors' summary modified.] **1116**

An experiment was conducted to determine if the digestion method described by Herlich [*V.B.* **26**, 3857] for the post-mortem recovery of nematodes from the wall of the digestive tract of ruminants would give accurate results when applied to (1) an organ that had been quick-frozen for a week or less, (2) samples of material promptly frozen after digestion of the fresh organ and kept in a freezer for examination when con-

venient. The test materials were stomachs from rabbits infected with *Trichostrongylus axei* larvae. The results showed that the number of worms recovered was not affected by the application of either or both of these freezing procedures. Digested material was maintained in a frozen state for 112 days without deleterious effect on the morphology of the parasitic larvae, and there was no apparent reduction in the number of larvae recovered. This digestion-freezing technique was used to determine the kinds and numbers of worms in the stomachs and small intestines of 42 calves with satisfactory results.

BYWATER, H. E. (1957). Nematodiriasis.—*Brit. vet. J.* **113**, 450-453. **1117**

B. states that the most dangerous pasture is a 3 year ley. He finds that counts of 50-200 eggs per g. of faeces are correlated with scouring in ewes and hoggets during autumn and winter, 200-500 e.p.g. with scouring in lambs during spring and early summer, and 800-1200 e.p.g. with death in the early part of the season. "Nemadis", an emulsion of purified chlorinated aliphatic hydrocarbons with trace element minerals, gave a worm clearance of over 75%. In 1955 it was used in 620, and in 1956 in 47,000 lambs. The results indicated that "Nemadis" effectively controlled *Nematodirus* infestation.

—D. POYNTER.

BAXTER, J. T. (1957). Some aspects of nematodirus disease in Northern Ireland.—*Vet. Rec.* **69**, No. 1007-1010. [Author's summary modified.] **1118**

Clinical disease caused by nematodirus infestation occurs in lambs in Northern Ireland. Reference is made to the part played by immature forms of the parasite. An outbreak occurred when lambs grazed pastures which had been heavily contaminated with eggs of *Nematodirus* 8 months previously, and were then left unstocked; two species were found: *N. filicollis* and *N. battus*.

DURIE, P. H. (1957). The relationship between intestinal cell fat content and infectivity of the third stage larvae of the bovine stomach worm *Haemonchus placei* (Place 1893) Ransom 1911.—*Aust. vet. J.* **33**, 305-306. [Abst. from author's summary.] **1119**

Although when stored at 26°C. the larvae had lost all their fat after 14 days, they yielded heavy infestations when fed to calves reared worm-free. It is apparent, therefore, that the presence of fat is not essential for infectivity. Only very light infestations were obtained with

third stage larvae less than 24 hours old. Such larvae may require a certain degree of "aging" before reaching their optimum infectivity.

HERLICH, H. & JOHNSON, J. M. (1957). **Critical tests on the efficacy of Dow ET-57 as an anthelmintic in cattle.**—*J. Parasit.* **43**, No. 5. Sect. 2. p. 19. [Only abst. given. Abst. modified.] **1120**

Of 8 Jersey steers, naturally parasitized, 4 were treated with an emulsion of Dow ET-57 and 4 with a wettable powder formulation. All were treated at a rate of 100 mg./kg. body wt., with total dosages between 5.4 and 15.25 g. The species of nematodes affected, average efficacy, range of efficacy expressed as percentage of worms removed were: *Haemonchus placei*, 98 (85–100); *Ostertagia ostertagi*, 46 (23–75); *Trichostrongylus axei*, 0.4 (0–4); *Cooperia punctata*, 59 (42–86); *Oesophagostomum radiatum*, 30 (8–88); and *Trichuris* spp., 9 (1–35). Completely unaffected were *Trichostrongylus colubriiformis* and *Nematodirus helvetianus*. There was no apparent difference in efficacy between the emulsion and the wettable powder.

EMERICK, R. J., BEMRICK, W. J., POPE, A. L. HOEKSTRA, W. G. & PHILLIPS, P. H. (1957). **The effect of mineral and phenothiazine supplementation on the resistance of grazing lambs to *Haemonchus contortus* infection.**—*J. Anim. Sci.* **16**, 937–942. **1121**

Studies were made of the efficiency of a mixture of NaCl and trace elements, supplemented or not with dicalcium phosphate or phenothiazine, in the treatment of stomach worms (*Haemonchus contortus*) in lambs. The NaCl mixture with either supplement gave better results than the mixture alone. Both supplements equally increased the resistance of lambs and, combined, they produced even better results.—T.E.G.R.

TROMBA, F. G. & DOUVRES, F. W. (1957). **The experimental infection of swine with nematodes of ruminants.**—*J. Parasit.* **43**, No. 5. Sect. 2. p. 12. [Only abst. given. Abst. from abst.] **1122**

Trichostrongylus colubriiformis and *T. axei* matured in normal young pigs, but *Ostertagia ostertagi* developed only in weak animals. *Dictyocaulus viviparus* and *Cooperia* spp. did not develop in weak or healthy pigs.

MADSEN, H. & WHITLOCK, J. H. (1957). **Preliminary studies on trichostrongylids in sheep by means of a gastric pouch.**—*J. Parasit.* **43**, No. 5. Sect. 2. p. 11. [Only abst. given. Abst. modified.] **1123**

Successful abomasal pouches were established in 6 sheep, 2 from strains genetically susceptible and 4 from strains genetically resistant to trichostrongylidosis. So far the technique has indicated that the expression of resistance is variable. Variation in pouch resistance was confirmed by variation in resistance of the sheep to repeated infections by the normal routes.

LUCAS, A. & LAROCHE, M. (1957). **Le tétrachlorure de carbone dans la thérapeutique anthelminthique aviaire. I. Son action dans la syngamose. [Carbon tetrachloride as an anthelmintic for birds. I. Syngamosis in pheasants.]**—*Rec. Méd. vét.* **133**, 329–334. **1124**

Oral administration of 0.0625 to 0.25 ml. of carbon tetrachloride, diluted fourfold in liquid paraffin, rid pheasants of severe *Syngamus trachea* infestation. The dose, which varies according to age and weight, may be given by syringe, in a capsule, or mixed into the food. If given in the food, the dose should be repeated on the 2 following days. For partridges weighing 200 g. a dose of 0.03125 ml. of the drug is recommended.—M.G.G.

WEBER, T. B. (1957). **Observations on the relation of serum protein changes, antibody formation, and eosinophilia in cattle infected with the lungworm, *Dictyocaulus viviparus*.**—*J. Parasit.* **43**, No. 5. Sect. 2. p. 14. [Only abst. given. Abst. from abst.] **1125**

In cattle with *D. viviparus* infestation, although no direct quantitative relationship between gamma globulin, antibody titre and eosinophilia was demonstrated, increases in gamma globulin and percentage of eosinophiles were associated with antibody formation and antibody titre.

KASSAI, T. (1957). **Vizsgálatok a juhok gócos tüdőférgességéről. III. Rész. A juh-protostrongylidák köztigazdái hazánkban. [Nodular verminous bronchitis in sheep. III. Intermediate hosts.]**—*Mag. állator. Lapja* **12**, 169–172. [In Hungarian. English and Russian summaries.] **1126**

Helicella obvia, *Zebrina detrita*, *Theba carthusiana*, *Cepaea vindobonensis*, *Helix pomatia*, *Abida frumentum*, the most usual snails on sheep pastures in Hungary, were intermediate hosts of *Cystocaulus ocreatus*, *Protostrongylus rufescens* and *Muellerius capillaris* in a study of 1,593 naturally and 2,019 artificially infected snails. However, the higher intensity and extent of infection in the young snails or the smaller species (e.g. *A. frumentum*) suggests that they are of greater epidemiological importance, since

they, like the worm larvae concerned, have a predilection for the lower levels of the herbage and by reason of their small size are the most likely to be eaten by sheep. [See also *V.B.* 28, 816.]—ANDREW SEBESTENY.

WALLEY, J. K. (1957). A new drug for the treatment of lungworms in domestic animals.—*Vet. Rec.* 69, 815-824 & 850-853. 1127

The discovery and use of cyanacethydrazide for the treatment of lungworms is described. It is effective against *Dictyocaulus viviparus* in cattle, *D. filaria* in sheep and goats, *Protostrongylus rufescens* in sheep and *Metastrongylus apri* in pigs, i.e., it is effective against worms normally living in air passages but it has no action on *Muellerius capillaris* and *Neostrongylus linearis* when these are in lung tissue. There is no action on migrating larvae. The worms were rendered inert and were swept up the trachea by ciliary action; consequently there were no secondary reactions due to dead worms in air passages. The drug is active orally and by s/c and i/m injection. A single treatment removes the majority of worms but animals severely infected should be treated on each of 3 successive days. The therapeutic dose administered s/c may cause transient local irritation which may be followed by slight lachrymation and increased salivation. Oral treatment is usually without side effects. Prolonged treatment does not cause any significant pathological damage. Overdosage (3 or more times the therapeutic dose) causes convulsions which if severe may lead to death. Pyridoxine (vitamin B₆) and thiopentone sodium are antidotes. For the best results intercurrent infections should be treated at the same time especially if a secondary bacterial pneumonia is present. Cyanacethydrazide may be used with sulphadimidine, piperazine, 1-diethylcarbamy-4-methylpiperazine, and phenothiazine. Treatment should preferably be given before cellular changes occur or secondary infections become established. The presence of pus may hinder the action of the drug by blocking the exit for the worms.—D. POYNTER.

LARSON, I. W. & HANSEN, M. F. (1957). Chemoprophylactic action of piperazine dihydrochloride against a typhlitis in chicks.—*J. Parasit.* 43, No. 5. Sect. 2. p. 19. [Only abst. given. Abst. from abst.] 1128

The drug showed promising chemoprophylactic action against typhlitis associated with *Heterakis gallinae* in chicks. The typhlitis was typical of that produced by *Histomonas meleagridis* but no protozoa were found in caecal contents or stained tissue sections. Chicks were fed

infective heterakid eggs at 14, 21, or 28 days of age. In those receiving the drug at 2500, 1250, 625, 500 or 250 mg./kg. body wt., 0%, 4%, 25%, and 41% developed typhlitis, but the number of adult or larval *H. gallinae* was not less than in control birds. Only rarely were adult heterakids recovered from typhlitic caeca.

POLLAK, J. K. (1957). Chemical differences between the ovaries of *Ascaris lumbricoides* obtained from two geographical locations.—*Aust. J. Sci.* 20, 23-24. 1129

Pairs of ovaries from *A. lumbricoides* collected in Australia had lower wet weights, but higher concentrations of non-protein nitrogen, free α -amino nitrogen and free ammonia nitrogen than worms collected in Canada.

—R. I. SOMMERVILLE.

GEE, R. W. & AUTY, J. H. (1957). The heartworm *Dirofilaria immitis* in Victoria.—*Aust. vet. J.* 33, 152-153. 1130

The symptoms and P.M. findings are described for what is believed to be the first recording of the presence of *D. immitis* in a dog bred south of Sydney. It is suggested that the parasite was transferred by an insect vector from the dog's parents which had both originally travelled into Queensland.—L. E. A. SYMONS.

HENNIGAR, G. R. & FERGUSON, R. W. (1957). Pulmonary vascular sclerosis as a result of *Dirofilaria immitis* infection in dogs.—*J. Amer. vet. med. Ass.* 131, 336-340. [Authors' summary modified.] 1131

In dogs with dyspnoea, ascites and slowness on exertion, endarteritis obliterans of the pulmonary arteries resulting from *Dirofilaria immitis* infection was demonstrated. The possibilities of this condition in the dog as an experimental tool in the study of chronic pulmonary hypertension and cor pulmonale are emphasized. Circulatory dynamic studies in such animals may assist in an understanding of the pathophysiology of the circulation in pulmonary vascular obstruction.

KUME, S. & OHISHI, I. (1957). Observations on the chemotherapy of canine heartworm infection with arsenicals.—*J. Amer. vet. med. Ass.* 131, 476-480. [Authors' summary modified.] 1132

More than 94% of the adult worms are destroyed within 10 days with dichlorophenarsine hydrochloride given i/v at the rate of 1.0 mg. of arsenic per kg. body wt. daily for 3 days. Thiacetarsamide (arsenamide) destroyed 97% of the adult worms when given at the same dosage

and in the same manner. Thus, the more protracted treatment schedule of 0.2 to 0.4 mg. of As/kg. daily for 15 days is not required. A minimum of 10 days must elapse before the full value of the arsenical can be determined.

SOULSBY, E. J. L. (1957). **Intradermal tests on pigs with antigens prepared from *Trichinella spiralis* and *Ascaris lumbricoides*.**—*Brit. vet. J.* **113**, 447-449. [Author's summary modified.] **1133**

Of 109 trichina free pigs tested with an antigen prepared from *T. spiralis* larvae 6 showed positive reactions. These occurred in animals which showed a marked skin reaction to an *A. lumbricoides* antigen and it is considered that marked sensitivity to ascaris may confer some degree of sensitivity to *Trichinella*. The presence of *Trichuris suis* did not cause sensitization to the trichina antigen.

GRÉTILLAT, S. (1957). Essai de traitement des helminthiases intestinale et pulmonaire du porclet à Madagascar. [Anthelmintics for pulmonary and intestinal nematode parasites of pigs.]—*Rev. Elev.* **10**, 5-14. [English and Spanish summaries.] **1134**

Tetrachlorethylene in capsule was effective against ascaris, trichocephalus and acanthocephalus. The recommended safe dosage is 1 ml. per 3 kg. for pigs between 3 and 12 kg.; 1 ml. per 4 kg. for pigs weighing 12 to 20 kg.; and 1 ml. per 5 kg. for pigs 20-35 kg. Tetrachlorethylene in oil (1:3), administered s/c at the same dosage, was effective against pulmonary strongyles. In cases of mixed verminous bronchitis and intestinal parasitism (ascaris, trichuris, acanthocephalus) combined treatment was both effective and safe. The dosage was: for pigs up to 12 kg: 1 ml./3 kg. s/c, and 1 ml./4 kg. in capsule; for pigs between 12 and 35 kg: 1 ml./4 kg. s/c, and 1 ml./5 kg. in capsule. Piperazine dithiocarbamate, 1 g./kg. gave good results in both intestinal and bronchial parasitism but individual treatment is difficult because the drug, being in powder form, has to be accurately weighed for each dose and this is not practicable where large numbers have to be treated. Sodium fluoride is highly toxic, is effective only against ascarids and is not effective in mixed infestation.

—T.E.G.R.

DORSMAN, W. (1957). **Variation within a day in the nematode egg-count of the rectal contents**

of cattle.—*Tijdschr. Diergeneesk.* **82**, 655-664. [In English, Dutch, French and German summaries. Author's summary modified.] **1135**

Egg counts in rectal contents, collected hourly from housed and grazing cattle, revealed a decrease from 8.30 a.m. to 11.30 a.m., followed by an increase and decrease between 11.30 a.m. and 1.30 p.m., and again between 1.30 p.m. and 3.30 p.m. Between 3.30 p.m. and 7.30 p.m. the count remained constant. Variation of the count from day to day was small if samples were taken at the same times.

DOUGLAS, J. R., BAKER, N. F. & LONGHURST, W. M. (1957). **The effect of divided dosage on the anthelmintic efficiency of phenothiazine in lambs.**—*J. Amer. vet. med. Ass.* **131**, 369-371. [Authors' summary modified.] **1136**

Administration of a total dose of 25 g. phenothiazine to lambs over periods of 1, 3, 5, or 7 days showed that anthelmintic efficiency decreased in an essentially linear relationship, falling from 65%, when the dose was given at once, to zero when it was given in equal daily parts over a period of 7 days.

MCCOWEN, M. C., GOSSETT, F. O., CALLENDER, M. E. & BRANDT, M. C. (1957). **Anthelmintic effect of 'Hygromix' (*S. hygroscopicus* fermentation products, Lilly) on helminths in swine.**—*J. Parasit.* **43**, No. 5. Sect. 2, pp. 18-19. [Only abst. given. Abst. modified.] **1137**

A crude dried broth of *Streptomyces hygroscopicus* containing hygromycin B was administered in the food to pigs. After 3 weeks far less eggs of *Ascaris*, *Oesophagostomum* and *Trichuris* were demonstrated in these pigs than in controls. The medicated food was acceptable and no toxic effects were observed.

EUZEBY, J. (1957). **Les helminthes du bétail et du porc dans la Fédération de Malaya. [Helminth parasites of cattle and pigs in Malaya.]**—*Rev. Elev.* **10**, 15-23. [English and Spanish summaries.] **1138**

Detailed results of a survey of helminth parasites affecting ruminants and pigs in Malaya are given. Numbers of animals examined are not stated. Incidence and pathogenicity of helminths encountered and control measures in Malaya are discussed.—T.E.G.R.

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS
[INCLUDING FOWL PARALYSIS]

PAMUKCU, A. M. (1957). Tumors of the urinary bladder in cattle and water buffalo affected with enzootic bovine hematuria. — *Zbl. VetMed.* 4, 185-197. [English, French and Spanish summaries. Author's summary modified.] 1139

Enzootic bovine haematuria occurs in Turkey among cattle and water buffaloes. The aetiology remains obscure. The urinary bladder is the primary seat of the affection. The lesions in 61 animals consisted of neoplastic proliferation of both epithelial and stromal tissues of the bladder, up to the most malignant forms of new growth. The tumours occurred either in pure form or in any combination of different types. In 16 cases the tumours were of the pure form: of these, 9 were of the epithelial lining; the remaining 7 arose from the stroma. In 45 cases the bladder tumours were a combination of papillary, or non-papillary, infiltrating or non-infiltrating epithelial tumours accompanied by stromal neoplasia. The histological classification of the tumours is given in a table. Eosinophilic bodies were observed in the cytoplasm and nucleus of adenocarcinoma, transitional-cell carcinoma and squamous-cell carcinoma in the urinary bladder. In one case they were also present in the metastatic tumour cells in the regional lymph nodes. Metastases were found in 4 of 43 animals examined P.M. In 3 the regional lymph nodes only were involved, and in one instance there were also metastases in the lungs and mediastinal lymph nodes. The evidence gathered supports the theory that adenocarcinoma of the urinary bladder originates from the transitional epithelium.

UTZIG, J. & SAMBORSKI, Z. (1957). Wpływ trójęterpenów zawartych w żagwi brzozowej—*Polyporus betulinus* na guzy Sticker'a. [Effect of extracts of the fungus *Polyporus betulinus* on Sticker's sarcoma.]—*Méd. vét., Varsovie* 13, 481-484. [In Polish. English and Russian summaries.] 1140

Ether extracts of *P. betulinus* were administered *per os* to 4 bitches at the rate of 3 g. daily for 3-10 weeks. In all cases regression or even complete disappearance of transmissible venereal sarcoma in the vagina, but no changes in the mammary gland tumours, were noted.

—M. GITTER.

TOYGARLI, S. A. (1957). Einige Tierversuche über die hemmende Wirkung der Epiphyse bei bösartigen Tumoren. [Inhibitory effect of

the pineal gland on malignant tumours.]—*Zbl. VetMed.* 4, 689-696. [English, French and Spanish summaries. English summary modified.] 1141

Two bitches with vaginal sarcomata and one with an anal sarcoma were given s/c injections of a pineal extract. The good results suggest that this is a useful therapy for malignant tumours. Trials are continuing.

BLOMQUIST, K. (1957). Growth stimulation in the liver and tumour development following intraperitoneal injections of liver homogenates in the rat. — *Acta path. microbiol. scand.* Suppl. No. 121. pp. 65. [In English.] 1142

Three-month-old rats, at which age practically no mitoses can be found in the liver, were given single i/p injections of homogenates prepared from the livers of new-born, 3- and 9-month-old rats, from regenerating rat liver, from the livers of rats fed dimethylaminoazobenzene (DAB), from the livers of colchicine-treated rats, from heterologous (calf) liver, and from other homologous tissue (rat muscle). The exposure times were 1, 2 and 3 days. The greatest number of mitoses occurred in the livers of rats injected with liver of new-born rats and particularly with regenerating liver. The mitotic rate was highest 2 days after injection.

Other rats were injected i/p twice weekly over a period of 13 months with homogenates of fresh liver of young (1 to 7-day-old) rats, dried liver of 3-month-old rats, dried regenerating liver, dried liver of rats fed DAB for 6 weeks, heterologous commercial liver extract, femoral muscle of young rats, and saline (controls). There was statistically an increased mitotic rate in one group only—that treated with dried regenerating liver. The liver DNA values were significantly increased in the groups given regenerating liver, commercial liver extract, and normal liver. Fatty degeneration of the liver was seen in all groups, particularly in those injected with regenerating liver and with saline. In the group injected with dried normal liver, a mammary fibroadenoma (presumably not significant) was the only tumour noted. In the group given regenerating liver, malignant tumours (15 reticular sarcomas, 2 pleomorphic sarcomas, 2 lymphosarcomas and 1 anaplastic liver carcinoma) occurred in 20 out of 30 rats. Rats injected with normal liver from those rats which provided the regenerating liver, on the other hand, developed no malignant tumours. One of the rats injected

with homogenate of striated muscle developed a fibrosarcoma at the site of injection through the abdominal wall.—E. COTCHIN.

KÖHLER, H. (1957). Untersuchungen am Knochenmark bei der Leukose des Rindes. [**Studies of the bone marrow in bovine leucosis.**]—*Dtsch. tierärztl. Wschr.* **64**, 132-134 & 182-186. **1143**

In bone marrow smears from cattle with leucosis, the total proportion of lymphoid and lymphocytic cells was at least one third greater than in normal cattle. Lymphatic leucosis was regarded as a basal-cell leucosis.—R.M.

BRION, A. & FONTAINE, M. (1957). Sur le traitement des leucoses myéloïdes du chien. [**Treatment of myeloid leucosis in dogs.**]—*Bull. Acad. vét. Fr.* **30**, 299-305. **1144**

The use of N-desacetylthiocolchicine in cases of lymphatic or monocytic leucosis led to rapid death. However, in cases of neutrophilic myeloid leucosis with or without leucaemia it was of value in causing an amelioration; this may last at least one year. The dosage must be controlled by regular blood counts. Details of two cases treated are given, and a full report will be published in a thesis by Lemaire.—E. COTCHIN.

NUTRITIONAL AND METABOLIC DISORDERS

GÜTTE, J. O. (1957). Beobachtungen zum Ferkelkümern. [**Observations on emaciation in piglets.**]—*Dtsch. tierärztl. Wschr.* **64**, 306-308. **1146**

Causes of emaciation in piglets are: insufficient milk secretion by the sow, failure of the piglets, through weakness, to stimulate the teats, and disturbed metabolism, shown by diarrhoea and excessive excretion of nitrogenous substances in the urine.—M.G.G.

SCOTT, M. L. & HEUSER, G. F. (1957). The value of grit for chickens and turkeys.—*Poult. Sci.* **36**, 276-283. **1147**

The effects of calcium grit and insoluble grit, singly or in combination, on chicks, turkeys and laying hens were studied. The diet consisted of mash and wheat. Insoluble grit (granite or feldspar) improved growth, egg production and feed utilization (the birds showed preference for feldspar). These effects were not produced by either crushed limestone or crushed oyster shell. In the absence of insoluble grit growing chicks on a diet adequate in calcium showed a tendency to over-eat calcium grit. Growing turkeys and laying hens on a low calcium diet (mash and

BURMESTER, B. R., DMOCHOWSKI, L., FONTES, A. K., GREY, C. E. & WALTER, W. G. (1957). **Electron microscopic studies of lymphomatosis.**—*Poult. Sci.* **36**, 1107-1108. [Authors' abst. modified.] **1145**

Ultra-thin sections of fixed tissues obtained from field cases of neural and visceral lymphomatosis and from cases of visceral lymphomatosis induced by inoculation with cell-free filtrates of Strain RPL 12 were studied by means of an RCA EMU-3A electron microscope. Destruction of such cytoplasmic elements as mitochondria and ergastoplasm was characteristically found in cells of the liver and spleen showing tumorous changes associated with visceral lymphomatosis. Such cells contained large osmophilic bodies made up of discrete virus-like particles. The observations suggest that the virus particles are formed and are released into intercellular spaces upon breakdown of the cells. The virus particles are approx. 90 m μ in diam. and have a centrally located zone approx. 30 m μ in diam. and of greater density than the peripheral area. Such changes in the cell structure were not found in the homologous organs of normal control chickens of the same strain and age, nor were virus-like particles present.

wheat) could adjust the calcium intake according to their requirements even in the absence of insoluble grit.—T.E.G.R.

STOB, M., DAVIS, R. L. & ANDREWS, F. N. (1957). **Strain differences in the estrogenicity of alfalfa.**—*J. Anim. Sci.* **16**, 850-853. [Authors' summary modified.] **1148**

There was wide variation in the oestrogenic activity of 56 samples of lucerne.

WILLIAMS, N. M. & TRIBE, D. E. (1957). **The feeding of urea to sheep.**—*J. Dept. Agric. Vict.* **55**, 769-771. **1149**

The value of mixtures of urea and molasses as supplementary food for sheep during summer was studied. In one trial sheep were fed oat straw containing 2.2% crude protein, and 35% crude fibre. The straw offered to some of the sheep was sprayed daily with 10 g. of urea and 40 g. of molasses per lb. of straw. All sheep lost weight, but the supplemented sheep lost less weight, and retained more appetite, than the unsupplemented. A digestibility trial showed that the urea-fed sheep were at a considerable advantage. From a third trial it was concluded that

urea is of no benefit when used as a supplement to good quality hay (11–12% crude protein); no advantage was detected when sodium sulphate, ethyl alcohol and/or vitamin B-complex were added to the ration of straw, urea and molasses; under the conditions of the experiment urea was a slightly better supplement for sheep than was sodium nitrate.—A. G. CULEY.

HARRIS, L. E., JAMES, J. C. & COOK, C. W. (1957). **A method of feeding supplements to individual cattle on winter range.**—*J. Anim. Sci.* **16**, 872-876. [Authors' summary modified.] **1150**

Temporary corrals and feeding chutes were used to feed supplements to range cattle. Feeding on alternate days was more satisfactory than feeding daily or every third day. Wild cattle became accustomed to this method after about 10 days and it was then possible to feed 60 animals in less than two hours. It is considered that by this method it will be possible to eliminate variables due to pastures and climate in field studies of group feeding.

LANDAGORA, F. T., RUSOFF, L. L. & HARRIS, B., JR. (1957). **Effect of aureomycin on young dairy calves raised in a new environment.**—*J. Dairy Sci.* **40**, 50-55. **1151**

29 new-born male calves were housed in an old byre and 32 in a new byre; calves in each byre were subdivided into 3 groups. One group served as controls, the second received aureomycin orally (50 mg. daily in the milk) and the third had 400 mg. aureomycin i/m weekly. Results showed that at 12 weeks of age aureomycin had increased body weight gains regardless of the environment; the growth stimulation was observed earlier in calves given aureomycin orally and was first apparent after 2 weeks in the new byre compared with 4 weeks in the old one.—E.V.L.

JOWSEY, J. R., COOK, F. D., MACGREGOR, H. I. & BLAKELY, R. M. (1957). **Lack of growth-promoting activity of inactivated penicillin with turkey poults.**—*Nature, Lond.* **180**, 923. **1152**

Feeding experiments with turkey poults showed that no significant difference existed between birds fed (from day-old for 4 weeks) diets containing no penicillin and those fed a starter ration containing penicillin inactivated either by heat or by penicillinase. However the growth response of poults fed active penicillin was significant at the 1% level.

—J. A. NICHOLSON.

WING, J. M. (1957). **Effect of para amino salicylic acid and chlortetracycline alone and in combination on dairy calves.**—*J. Anim. Sci.* **16**, 854-857. [Author's summary modified.] **1153**

Growth in young calves was stimulated by PAS and by chlortetracycline fed singly; combinations of the two, however, caused no significant increase in growth.

LUCAS, I. A. M. & CALDER, A. F. C. (1957). **Antibiotics and a high level of copper sulphate in rations for growing bacon pigs.**—*J. agric. Sci.* **49**, 184-199. **1154**

Using a total of 168 pigs about 40 lb. in weight, different groups in 4 series of experiments were given feed supplements of copper sulphate or antibiotics, either alone or in combination, until they had attained 200 lb. weight. Procaine penicillin was added at the rate of 5.36 mg./lb. feed, or aureomycin at 8.03 mg./lb. and copper sulphate $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ as 0.1% of the diet. The detailed results of these experiments indicated that, compared with the controls, the supplementing of the feed with procaine penicillin alone increased growth rate not more than 3% up to 100 lb. body wt. and had little effect over the whole period up to 200 lb. Copper sulphate alone was much more effective, up to 9% increase to 100 lb. weight and 4% over the whole period; the greatest increases occurred with copper sulphate and penicillin in combination, varying from 10 to 22% up to 100 lb. and 9% over the whole period up to 200 lb.—E.V.L.

HEGLAND, R. B., LAMBERT, M. R., JACOBSON, N. L. & PAYNE, L. C. (1957). **Effect of dietary and management factors on reflex closure of the esophageal groove in the dairy calf.**—*J. Dairy Sci.* **40**, 1107-1113. [Authors' summary modified.] **1155**

Rumen fistulae were prepared in four young calves. The calves were fed the experimental diets either by open bucket or nipple-pail; however, only the nipple-pail was used in feeding the non-experimental diet for 45 days. At this time, two of the calves were changed to the open-bucket method of feeding of the non-experimental diet, whereas the other two were continued on nipple-pail feeding. One of each pair was also fed hay, dry concentrates, and water free choice after 64 and 81 days of age, respectively. The remaining two calves were placed on a hay-and-grain ration after 125 days of liquid feeding. Capsules of various sizes ranging up to $\frac{5}{8}$ inch in diameter and $1\frac{1}{8}$ inches in length passed readily through the groove to

the omasum, when the groove was closed by concomitant feeding of the various liquids. Nearly all capsules, regardless of size, were deposited in the reticulum when no liquid was consumed concurrently by the calf. Whole milk, reconstituted skim milk, reconstituted whey product, and water all effected complete closure of the oesophageal groove in all calves during the first 6 weeks after birth. Up to 6 weeks of age the nipple-pail and open-bucket methods of feeding were equally efficient. Nipple-pail feeding effected closure of the groove in all calves up to 13 weeks of age (in some cases longer), whereas open-bucket feeding was less effective after the 6th week of age.

MULLANEY, P. E. (1957). Grass sickness?—*Irish vet. J.* 11, 205-206. 1156

A suspected case of grass sickness in a 6-year-old cob is reported. The main symptoms were severe constipation with marked debility and progressive emaciation. Death occurred in about 10 days from the onset of symptoms. On P.M. examination the bowel wall was thickened and the mucous membrane corrugated. There was no evidence of liver cirrhosis or gross parasitism.—J. A. NICHOLSON.

MUNCH-PETERSEN, E. (1957). Microbial metabolism in ruminant digestion.—*Aust. vet. J.* 33, 292-296. [Author's summary copied verbatim.] 1157

Microbial metabolism in the rumen depends largely on a very high concentration of micro-organisms, mainly bacteria and protozoa. Attempts have been made to study the activities of these organisms *in vitro* and *in vivo*. For *in vitro* work three main methods have been used: the artificial rumen; washed suspensions, and pure cultures of organisms. These methods have helped to throw light on the physiological and chemical reactions in the rumen and certain disorders in ruminants, influenced or caused by the activities of the rumen microbial populations.

REID, C. S. W. (1957). Bloat in cattle on red clover. II. The tympanograph, a simple apparatus for recording abdominal girth changes in stalled animals.—*N. Z. J. Sci. Tech. Sect. A.* 38, 853-866. [Author's summary copied verbatim.] 1158

The corrugated-rubber-tube stethograph has been adapted to record abdominal girth changes in stalled cattle. The tracings not only record the primary girth changes due to feeding or bloating, but also reflect activities such as respiration, feeding, body movements, urination,

defaecation, and, under favourable conditions, rumen movements and belching. Examples of the uses of the technique are given.

REID, C. S. W. (1957). Effects of ingestion of paraffins by ruminants. I. The effects of different liquid paraffins on the feed intake of non-lactating monozygotic twin cows.—*N. Z. J. Sci. Tech. Sect. A.* 38, 825-838. [Author's summary modified.] 1159

MCDOWALL, F. H., MCGILLIVRAY, W. A. & REID, C. S. W. (1957). Effects of ingestion of paraffins by ruminants. II. Ingestion of heavy liquid paraffin by milking cows in relation to yield and composition of milk and to properties and fat-soluble vitamins of butterfat.—*Ibid.* 839-852. [Authors' summary copied verbatim.] 1160

MCGILLIVRAY, W. A. (1957). Effects of ingestion of paraffins by ruminants. III. Effect of paraffin oil on the levels of carotene and vitamin A in the blood plasma and milk fat of cows—a further investigation.—*Ibid.* 878-886. [Author's summary modified.] 1161

I. The effects of four different samples of liquid paraffin on the feed intakes of non-lactating, stall-fed monozygotic twin cows were studied. Single doses of 200 ml. of heavy or of light liquid paraffin of medicinal (British Pharmacopoeia) quality had no deleterious effect on the appetite of treated cows. Temporary reductions of 40-90% in feed intake occurred following a single dose of 200 ml. of an odourless kerosene or of a very light grade of paraffin of high iso-paraffinic content. There was a delay between dosing and the appearance of the effect. The length of this delay and the depression of the appetite varied between sets of twins, members of an individual set responding alike. Recovery of appetite was progressive, taking usually 3-4 days. The loss in intake was not made up subsequently. The time lag was almost abolished and the degree of appetite depression was about doubled by introducing 200 ml. of coarsely emulsified odourless kerosene directly into the omasum. From this and other evidence it is considered that the initial stage at least, of the effect is post ruminal. Possible evidence of activity of the oesophageal-groove reflex in one pair of adult twin cows was obtained. It was concluded that it is undesirable to administer very light paraffins to ruminants. The significance of this is discussed in relation to treatment and prevention of bloat. Attention is drawn to the value of identical twins for experiments on factors affecting the appetite.

II. Ingestion by milking cows of heavy liquid paraffin (B.P.) at the rate of 75 ml. twice

daily for 26 days did not affect the yield of milk, the fat and solids-not-fat contents of the milk, or the iodine and saponification values of the butterfat. There was a continuous fall in the carotene content of the blood, reaching a maximum depression of 40% after about 16 days of treatment, and a 20% reduction in vitamin A ester content of the blood. Parallel with the blood changes, the carotene level of the butterfat fell by 40–50%, and the vitamin A level was slightly lowered. The vitamin A alcohol level of the blood was unaffected. Recovery of blood carotene to control levels was slow; it was almost complete 3 weeks after cessation of treatment. These results are interpreted as reflecting a reduction in carotene absorption caused by the ingestion of paraffin oil. Xanthophyll absorption appeared to be unaffected. Tocopherol absorption was reduced. After three weeks' treatment the level of tocopherol in the blood had fallen by 40% and in the butterfat by 20%. The butter from cream obtained from treated cows was visibly lighter in colour than the control butter. It is concluded that, provided ingestion of mineral oil has no harmful effects on the health of the cow, administration of liquid paraffin could be used as a means of reducing the depth of colour of the butter. This reduction of colour, however, would be accompanied by a lowering of the vitamin A and vitamin E potencies.

III. The effect of different amounts of orally administered liquid paraffin on the levels of carotenoids and vitamin A in the blood plasma, butterfat, and subcutaneous fat of cows was further studied. The depression of carotene and vitamin A ester levels in the butterfat and of carotene levels in the blood plasma was proportional to the paraffin-oil dosage level; some evidence is presented regarding the mode of action of the oil. The possible use of liquid paraffin as a means of reducing the yellow colour of butterfat is discussed.

- I. BRIGGS, P. K., HOGAN, J. P. & REID, R. L. (1957). **The effect of volatile fatty acids, lactic acid, and ammonia on rumen pH in sheep.** — *Aust. J. agric. Res.* **8**, 674–690. [Authors' summary copied *verbatim*.] 1162
- II. REID, R. L., HOGAN, J. P. & BRIGGS, P. K. (1957). **The effect of diet on individual volatile fatty acids in the rumen of sheep, with particular reference to the effect of low rumen pH and adaptation on high-starch diets.** — *Ibid.* 691–710. [Authors' summary modified.] 1163

I. Data are presented on pH, volatile fatty acid, lactic acid, and ammonia nitrogen levels in the rumen of sheep being hand-fed on a wide

range of diets. It is concluded that the rumen pH rarely falls outside the range 5.0–7.5 on diets on which lactic acid never accumulates in the rumen after feeding. On such diets rumen pH is closely related to the volatile fatty acid level. Evidence is presented which indicates that the pH–volatile fatty acid relationship on different diets may be considerably modified by variations in salivary secretion and in the accumulation of ammonia nitrogen in the rumen after feeding. The contribution of ammonia nitrogen to the total buffering capacity of the rumen is discussed. Lactic acid only accumulated in the rumen on diets containing high levels of soluble carbohydrate or starch. Lactic acid levels above 20 mM were always associated with pH levels below 5.0, but although levels higher than 80 mM were often recorded, rumen pH levels never fell below 4.35. On these diets rumen pH was closely related to the level of volatile fatty acid or lactic acid or both in the rumen.

II. Detailed data are presented on changes in the proportions of acetic, propionic, and butyric acids in the rumen after feeding on various diets. Pre-feeding proportions were constant on each diet but varied from a mixture of 72–76% acetic, 14–16% propionic, and 10–12% butyric acid on all-roughage diets to one of 63–65% acetic, 18–20% propionic, and 16–18% butyric acid on a diet containing 70% wheat grain. On all diets the proportion of propionic acid increased after feeding and reached a peak which coincided with the maximum level of total volatile fatty acids. The response of butyric acid was variable, low levels being recorded on a diet of lucerne chaff and on one containing a high proportion of cracked maize. The proportion of acetic acid always declined after feeding. These responses were modified in experiments on rations containing high proportions of wheat starch, in which rumen pH fell below 5.0 as a result of lactic acid accumulation. When animals were first fed on such diets, a decline in rumen pH below 5.0–5.5 after feeding was always associated with a pronounced decline in the proportions of propionic and butyric acids, to levels as low as 8 and 5% respectively. Continued feeding of such diets did not affect the response of butyric acid, but there was evidence of a change in propionic acid production in response to low pH conditions, in respect of both short-term change during experiments in which low rumen pH levels were maintained for considerable periods and long-term change when such diets were fed intermittently over considerable periods. The implications of these findings are discussed in relation to the effects of pH on indi-

vidual volatile fatty acid production in the rumen, and on the qualitative nature of the microbial population and on their metabolic patterns.

MCDONALD, I. W. & HALL, R. J. (1957). **The conversion of casein into microbial proteins in the rumen.**—*Biochem. J.* **67**, 400-405. [Authors' summary copied *verbatim*.] **1164**

A partially purified diet, suitable for adult sheep, has been devised. When casein provided 87% of the nitrogen in this diet, at least 90% of the casein was degraded in the rumen and utilized for the synthesis of microbial proteins. This conclusion was based on the estimation of casein in the mixed ingesta leaving the stomach. A chemical procedure was developed for determining small amounts of casein in the presence of other proteins; this procedure relies on the removal of inorganic phosphate from the original sample by dialysis, the alkaline hydrolysis of the phosphate group of casein and the subsequent estimation of the inorganic phosphate so formed.

PEIRCE, A. W. (1957). **Studies on salt tolerance of sheep. I. The tolerance of sheep for sodium chloride in the drinking water.**—*Aust. J. agric. Res.* **8**, 711-722. **1165**

Four groups, each of 6 sheep, were fed in pens for 15 months on an adequate diet of chaffed lucerne and wheat hays. One group had rain-water to drink, and the others similar water to which sodium chloride had been added to give concentrations of 1.0, 1.5 or 2.0% NaCl. The intake of water increased with concentration of NaCl, and with temperature, being 50-70% higher in the hottest than in the coldest months. The intake of NaCl by some sheep was very high; 4 of them consumed 170-230 g. daily for periods of 1-10 weeks. 1% NaCl in the water had no adverse effects, 1.5% was detrimental to some, and 2% to all of the sheep. Effects were decline in food consumption and body weight, and emaciation and occasional diarrhoea in the 2% group. Sodium chloride in the drinking water had no effect on the conc. of sodium, potassium, calcium or magnesium in the blood plasma. The chloride concentration was significantly higher in the group which received water containing 2% NaCl.

ROBERTS, R. E. (1957). **Salt tolerance of turkeys.**—*Poult. Sci.* **36**, 672-673. **1166**

Turkeys, 26 weeks old, tolerated concentrations of 6% and 8% of salt in their mash for 4 weeks. The only effects were smaller gains in weight, compared with birds receiving 4% or less, and high water consumption.—M.G.G.

ARMSTRONG, R. H., THOMAS, B. & ARMSTRONG, D. G. (1957). **The availability of calcium in three grasses.**—*J. agric. Sci.* **49**, 446-453. [Authors' summary modified.] **1167**

The calcium in both timothy and perennial rye-grass was more available for rats than that in cocksfoot. The grasses as a whole were inferior to both the legumes and herbs in respect of calcium availability. The significance of high faecal calcium values found in rats fed cocksfoot diets is discussed. There was some indication of inverse relationships between both fibre content and oxalic acid content, and calcium availability. No single one of the nine grassland plants studied had a calcium availability which, when taken in conjunction with total Ca content, would be likely to induce symptoms of deficiency in an animal fed on that species alone.

DOWE, T. W., MATSUSHIMA, J. & ARTHAUD, V. H. (1957). **The effects of adequate and excessive calcium when fed with adequate phosphorus in growing rations for beef calves.**—*J. Anim. Sci.* **16**, 811-820. **1168**

In two feeding trials calcium:phosphorus ratios of 1.3:1, 4.3:1, 9.1:1, and 13.7:1 were fed to four groups of calves on the same daily feed. Gain weights decreased as the Ca increased. From a study of the differences in gain weights among the groups it is considered that a critical Ca:P ratio may exist between 4.3:1 and 9.1:1. The excess Ca intake did not affect the blood Ca level. The inorganic phosphorus content of the blood differed significantly between treatments in one trial but not in the other. It did not fall below the normal requirements for adequate nutrition. This is taken to indicate that the excess calcium did not interfere with the phosphorus metabolism.—T.E.G.R.

SMITH, R. H. (1957). **Calcium and magnesium metabolism in calves. Plasma levels and retention in milk-fed calves.**—*Biochem. J.* **67**, 472-481. [Author's summary modified.] **1169**

Calves were fed diets consisting basically of whole milk for up to 46 weeks. At ages less than 5 weeks they were shown to retain 39-54% and to excrete in the urine 13-34% of their dietary magnesium.

The hypomagnesaemia, which sooner or later appeared as the calves got older, was associated with a progressive decrease in their ability to utilize dietary magnesium. This decrease continued until little or no magnesium was retained or excreted in the urine.

Hypocalcaemia, which also occurred in some of the calves when inadequate vitamin D was present in the diet, appeared to be associated

with a decrease in their ability to utilize dietary calcium. This decrease may have been related to the decrease in their ability to utilize magnesium, but the addition of a high level of vitamin D to the diet led to a marked improvement in calcium utilization only. The amount of vitamin D required to restore and maintain normal calcium retention appeared, in some cases, to be exceptionally high.

The changes in the plasma-magnesium and -calcium levels did not appear to be associated with any changes in the plasma inorganic-phosphorus level or in the proportions of plasma magnesium and calcium which were ultrafilterable.

Growth appeared to be unaffected during the early stages of magnesium deficiency, but sometimes inhibited after a long period of gross hypomagnesaemia.

PARR, W. H. & ALLCROFT, R. (1957). The application of magnesium compounds to pasture for the control of hypomagnesaemia in grazing cattle: a comparison between magnesian limestone and calcined magnesite. — *Vet. Rec.* **69**, 1041-1047. [Authors' summary modified.] **1170**

Pasture was heavily manured with ammonium sulphate in an attempt to produce hypomagnesaemia in grazing cows. Calcined magnesite at 10 cwt. per acre was more effective in raising the pasture Mg content and in preventing hypomagnesaemia than magnesian limestone at $2\frac{1}{2}$ tons per acre. It increased the pasture content by about 73% compared with 23% achieved by the magnesian limestone. This suggests that calcium may influence the uptake of Mg by pasture. A seasonal trend in the Mg content of the pasture was observed, and in pasture treated with calcined magnesite it varied according to the stage of growth. The potential value of magnesium manures in preventing hypomagnesaemia is discussed briefly.

HALLGREN, W. & SWAHN, O. (1957). Parakeratosis diætetica hos svin. [Nutritional parakeratosis in pigs.]—*Nord. VetMed.* **9**, 489-504. [In Swedish, English and German summaries. Abst. from English summary.] **1171**

Pigs develop this condition (for which the name "parakeratosis diætetica" is suggested) when given food rich in protein and calcium and not enough water. It is prevented by adequate drinking water, wet food for at least a month after weaning, zinc carbonate at the rate of 100 g. per 1000 kg. of food, and roughage in the diet. —M.G.G.

HENDERSON, J. A. (1957). Conditioned copper deficiency in Canadian cattle. — *Canad. J. comp. Med.* **21**, 332-336. [French summary.] **1172**

In parts of Ontario and Manitoba a disease syndrome associated with low blood copper and high molybdenum intake has been reported. General symptoms are profuse scouring, change in coat colour, and progressive emaciation. The condition can be prevented by the administration of copper sulphate in a mineral mixture. The general problem is discussed briefly, the author differentiating between simple copper deficiency and a disturbed copper metabolism or "conditioned deficiency" brought about by factors other than an absolute copper deficiency, but preventable by administration of copper.

—R. V. L. WALKER.

HICKEY, F. (1957). Copper deficiency in farm animals.—*N.Z. Agriculturist* **10**, 6-8. **1173**

In reply to a suggestion by a correspondent that the syndromes attributed to copper deficiency in sheep and cattle may be primarily due to specific infection it is stated that copper deficiency may be generally regarded as the primary cause. The reasons for this statement are that: no pathogenic organisms have been demonstrated; copper levels in affected animals are low; and replacement therapy is effective. Swayback in sheep and the analogy between this condition and disseminated sclerosis in man are discussed. Reference is made to the occurrence of the latter disease in four of seven research workers investigating swayback. The role of copper in these diseases and the interaction between copper and iodine are discussed.—T.E.G.R.

GALLAGHER, C. H. (1957). The pathology and biochemistry of copper deficiency.—*Aust. vet. J.* **33**, 311-317. [Author's summary copied verbatim.] **1174**

The biochemical disturbances which result from copper deficiency are discussed. The disturbances which are thought to be concerned with the pathogenesis of the disease are: an early, severe and progressive loss of activity of the terminal respiratory enzyme, cytochrome oxidase; an increased susceptibility of mitochondria to "ageing"; a decrease in the rate of phospholipid synthesis; and a reduction in the rate of synthesis of protohaem. The interrelationship of these disturbances and their relevance to the pathological and clinical syndrome of copper deficiency are discussed.

COMMISSIONG, K. & NICHOLAS, D. J. D. (1957). Effects of molybdenum and copper on some

enzymes in *Neurospora*.—*Nature, Lond.* **180**, 555-556. **1175**

Experiments with cultures of *Neurospora crassa* showed reciprocal antagonism between copper and molybdenum in relation to certain enzyme systems, whereby the enhancing effect which followed increasing the concentration of one element was much reduced by raising the level of the other. The enzyme systems used were cytochrome oxidase and reductase, and acid phosphatase. The antagonism between copper and molybdenum in animal metabolism may thus be due to their effects on enzyme systems. —E. G. WHITE.

SNOOK, L. C. (1957). Vitamin A supplements for sheep and cattle.—*J. Agric. W. Aust.* **6**, 439-442. **1176**

Where grazing animals have access to green feed over the winter months it is unlikely that vitamin A supplements will be required during a normal dry summer in the agricultural area of Western Australia. Two experiments are briefly reported. (1) In February of the dry summer of 1953/54 each alternate ewe of 200 ewes was drenched with 500,000 i.u. of vitamin A. All the ewes received dry paddock grazing plus oats at the rate of 1 lb. per head daily. The results did not suggest that vitamin A supplement increased birth weight or viability of lambs or stimulated growth rates. (2) Fifty crossbred weaner wethers were weighed and each alternate one was given 500,000 i.u. of vitamin A. The sheep were given access to dry subterranean clover and dry annual grasses, and oats was supplied at a rate of 1 lb. per head daily. All the sheep remained in apparent good health, and although the changes in body wt. did seem to favour the supplemented group the difference would be of little significance in practice. During the final month when one would have expected a deficiency of vitamin A to exert its maximum effect, both groups showed a similar increase in body wt.—A. G. CULEY.

SCOTT, H. M., NOTZOLD, R. A., MOELLER, M. W. & FISHER, H. (1957). Nutritional factors in relation to the expression of vitamin E deficiency symptoms in chicks.—*Poult. Sci.* **36**, 949-953. [Authors' summary modified.] **1177**

Feeding a highly refined diet, severely deficient in vitamin E, and supplemented with 3% fish-liver oil failed to induce the classical symptoms of vitamin E deficiency (encephalomalacia and exudative diathesis) in chicks from hens that had not been depleted of vitamin E. Both symptoms appeared when chicks were fed

experimental diets used by other investigators. It is concluded that there are nutritional factors other than those described to date, which influence the manifestation of vitamin E deficiency in the chick.

ANTAL, J. (1957). B₁-avitaminosis lovakban. [Vitamin B₁ deficiency in horses.]—*Mag. állator. Lapja* **12**, 190-191. [In Hungarian. English and Russian summaries.] **1178**

Incoordination, increased or decreased sensitivity, and bradycardia (22-32/min.), with anorexia, were observed in 9 horses of predominantly heavy breeds. In 6 cases the diet was deficient in vitamin B₁; in the other 3 the diet was found to contain 5-20% of *Equisetum arvense* and the deficiency was due to its B₁ antivitamin content. All the horses recovered clinically after daily i/m injection of 200 mg. thiamine hydrochloride for 3 days and a daily supplement of 150-200 g. yeast to a diet free from equisetum for 10-14 days.

—ANDREW SEBESTENY.

DAWBARN, M. C., HINE, D. C. & SMITH, J. (1957). The determination of vitamin B₁₂ activity in the organs and excreta of sheep. 6. Vitamin B₁₂-activity in portal blood.—*Aust. J. exp. Biol. med. Sci.* **35**, 321-325. [Authors' summary modified.] **1179**

The vitamin B₁₂-activity was measured (using the *Lactobacillus leichmannii* and *Ochromonas malhamensis* assay procedures) in extracts of systemic and portal blood plasma, liver, rumen contents and small intestine contents of 4 sheep on a cobalt-deficient diet of wheat-hay chaff and gluten and given a cobalt supplement by mouth. Three of the sheep had adequate tissue stores of vitamin B₁₂; the tissues of the fourth were seriously depleted but the vitamin B₁₂-activity in the gut contents was normal. In the livers the two assays gave results which agreed closely. In the contents of rumen and small intestine the measurements made with *L. leichmannii* were 170 to 330% of those obtained with *O. malhamensis* as the test organism. The two assays gave the same measure of vitamin B₁₂-activity in the systemic blood plasma of the 3 sheep with adequate tissue stores of the vitamin. In the portal blood plasma samples the *L. leichmannii* estimates averaged 5% higher. In the samples of systemic and portal blood plasma from the depleted animal the *L. leichmannii* assay gave results between 20% and 30% higher than those of the *O. malhamensis* assay. Three possible explanations of the phenomena are suggested.

JARRETT, I. G. & POTTER, B. J. (1957). The metabolism of lower fatty acids in diabetic sheep.—*Aust. J. exp. Biol. med. Sci.* **35**, 103-114. 1180

Sheep made diabetic by an injection of alloxan or by pancreatectomy show a delayed removal of injected acetate, propionate and butyrate from the systemic circulation; the delay in the removal of acetate is more pronounced than that of propionate or butyrate. Concurrent observations on the blood concentrations of glucose, ketone bodies and pyruvate following the injection of the lower fatty acids indicate partial failure in the utilization of these acids by diabetic ruminants; the data suggest that some factor other than a metabolic block in glycolysis is involved in the abnormal metabolism in de-pancreatized sheep.—R. L. REID.

MOUNT, L. E. (1957). Alloxan diabetes in the piglet.—*Nature, Lond.* **180**, 344. 1181

Fourteen piglets about 2 weeks of age were injected with alloxan in doses ranging from 75 to 250 mg./kg. body wt.; of these six were made glycosuric including 3 marked diabetics. The effective dose was 200-250 mg./kg. after a fast of 24 hours; the blood sugar and urinary excretion rose together, the glycosuria and urinary nitrogen were approximately parallel to the food intake. The animals did not appear ill and weight gain continued; they were relatively insensitive to insulin; the pancreas showed an absence of beta cells while the alpha cells remained readily apparent.—E.V.L.

BUTLER, G. W., FLUX, D. S., PETERSEN, G. B., WRIGHT, E. W., GLENDAY, A. C. & JOHNSTON, J. M. (1957). Goitrogenic effect of white clover (*Trifolium repens* L.) II.—*N.Z. J. Sci. Tech. Sect. A.* **38**, 793-802. [Authors' summary modified.] 1182

Two groups of sheep were grazed on cyanogenetic (CN) and non-cyanogenetic white clover for 43 days. At the end of this period no significant differences between groups were observed in the incorporation of ^{131}I into the thyroids or in the heights of the acinar cells. The sheep fed on CN clover showed a decrease in the total iodine content of the thyroid per unit fresh weight. In an *in vitro* experiment it was shown that the levels of thiocyanate occurring in the blood sera of sheep grazing CN clover inhibited the conversion of inorganic iodide to organically bound iodine by freshly excised thyroid slices. The effect of periodic injections of thiocyanate and the time elapsing between the last injection of thiocyanate and intraperitoneal injection of ^{131}I iodide on the rate of incorporation of

^{131}I into the thyroid was examined in rats. Both factors influenced the rate of ^{131}I incorporation into the thyroids.

HART, D. S. (1957). Stimulation of wool growth by thyroxine implantation.—*N.Z. J. Sci. Tech. Sect. A.* **38**, 871-877. [Author's summary copied *verbatim*.] 1183

The results from recent field trials on the effects of l-thyroxine when implanted in the sheep are discussed. Particular attention has been directed towards the effect of this hormone on the wool produced. The evidence from all trials demonstrates that an increased rate of growth of wool varying from 5 to 15% of total fleece weight was obtained. The increased weight of wool produced is partly due to additional length of staple, there being no apparent change in "count." This results in an improvement in the commercial grade of the whole fleece and reduction in the percentage of fleeces with cotts and breaks; at the same time there is no difference in yield. No adverse effects on either mortality rate or the fertility of mature ewes have been observed.

ROBERTSON, W. G., LENNON, H. D., JR., BAILEY, W. W. & MIXNER, J. P. (1957). Interrelationships among plasma 17-hydroxycorticosteroid levels, plasma protein-bound iodine levels, and ketosis in dairy cattle.—*J. Dairy Sci.* **40**, 732-738. 1184

Cows with ketosis had significantly higher levels of plasma 17-hydroxycorticosteroids and blood acetone and significantly lower levels of plasma protein-bound iodine and blood sugar than control cows. It was noted that in the cows with ketosis, particularly high 17-hydroxycorticosteroid levels were associated with particularly low protein-bound iodine values. In 10 normal cows plasma protein-bound iodine values decreased at parturition and during the following fortnight and then returned slowly to normal over the next 6 weeks. The authors suggest that ketosis may be caused primarily by hypothyroidism inducing adrenal cortical insufficiency.—E. J. CASTLE.

MANUNTA, G., SAROFF, J. & TURNER, C. W. (1957). Metabolism of Ca^{45} in blood, bones, and young of lactating rats treated with estradiol.—*Proc. Soc. exp. Biol., N.Y.* **94**, 788-789. 1185

Beginning on the day of parturition 12 female rats were each given i/p, over a period of 3 days, $2.65 \mu\text{C}$ of Ca^{45} /100 g. body wt. and 6 also received 4 daily s/c doses of $1.5 \mu\text{g}$. of oestradiol benzoate. On the fifth day mothers

and litters were killed. The average weight gains of the litters were similar in the 2 groups but the radioactivity in both serum and bone was higher in the mothers treated with oestro-

See also absts. 1289 (book, animal nutrition); 1296 (book, breeding, nutrition and husbandry of farm animals).

DISEASES, GENERAL

LEECH, F. B. (1958). A national survey of diseases of the dairy cow: the sample of herds.—*Vet. Rec.* 70, 32-34. [Author's summary copied *verbatim*.] 1186

A discussion of the factors taken into account when specifying a sample of herds suitable for this survey is followed by a description of the technique of drawing the sample by random selection.

PECK, E. F. (1957). An operational knackery survey in Devon, 1953-6.—*Vet. Rec.* 69, 939-947. 1187

Knackery survey in general is discussed and results of 300 necropsies are presented in various tables. These and diagnoses made by the knacker are analysed and discussed.—T.E.G.R.

MORO S., M. (1957). Contribución al estudio de las enfermedades de los auquénidos. [Diseases of alpacas, vicunas and llamas in Peru.]—*Rev. Fac. Med. vet. Lima* 7-11, 5-116. [English summary.] 1188

This report deals with a variety of conditions including: diarrhoea in young animals due to several causes; *Cl. welchii* infection in alpacas; sudden death in alpacas associated with *Cl. septicum*; osteomyelitis of the mandible; streptococcal fever and rabies in alpacas.

—R.M.

I. BLAŽEK, K. (1956). Příspěvek k enzootické hepatidě koní. [Enzootic hepatitis in horses. I.]—*Sborn. čes. Akad. zemědělsk. Věd. Vet. Med.* 29, 157-174. [In Czech, English, German and Russian summaries.] 1189

II. ZÍCHA, B. & BLAŽEK, K. (1956). K biochemickému obrazu enzootické hepatitidy koní. [Biochemical study of enzootic hepatitis in horses.]—*Ibid.* 693-704. [In Czech, English, German and Russian summaries.] 1190

I. B. described an enzootic form of equine hepatitis, aetiologically apparently unrelated to pasture flora and soil composition, and generally resembling human virus hepatitis clinically. Onset was sudden, with inappetence, somnolence, mild fever, generally followed within 2-3 days by icterus and often by haemoglobinuria, and death. Nervous symptoms were sometimes present. The disease was reproduced

gen. It is suggested that the administration of oestrogen raises the renal or faecal threshold for Ca, and might prevent parturient paresis in cows.—M.G.G.

experimentally in two horses by s/c inj. of 10 ml. of a 10% liver-spleen tissue suspension from material derived from an acute, fatal case. Five case histories are given in some detail and pathology and histology are described.

II. In a study by various biochemical methods of sugar, fat and protein metabolism in 6 horses affected with an enzootic form of hepatitis, an attempt was made to correlate the data obtained with clinical and histological findings.—E.G.

I. ŠOBRA, K. (1956). Hepatocerebrální nemoc koní a její vztah k leptospirose a jiným nemocem s těžkým ikterem. [Hepatocerebral disease of horses, its relationship to leptospirosis and other icteric diseases.]—*Sborn. čes. Akad. zemědělsk. Věd. Vet. Med.* 29, 725-756. [In Czech, English, German and Russian summaries.] 1191

II. ŠOBRA, K. (1956). Leptospiroza a žďárská choroba koní. [Leptospirosis and Žďár disease of horses.]—*Ibid.* 757-782. [In Czech, English, German and Russian summaries.] 1192

III. VANĚK, J. (1956). Srovnávací studie experimentálně vyvolané otravy starčkem se žďárskou chorobou koní. [Comparative study of experimental *Senecio erraticus* poisoning and Žďár disease of horses.]—*Ibid.* 705-724. [In Czech, English, German and Russian summaries.] 1193

I. A sporadic brain-liver syndrome in horses in Czechoslovakia of unknown aetiology was described. During November-March the disease took a milder course and incidence was lowest. Experimental transmission to horses failed. From clinical material collected in the Brno district between 1953-55 the condition appeared to resemble equine leptospirosis as described in France [*V.B.* 26, 754 & 1806] and conditions reported from Finland by Stenius [*V.B.* 12, p. 458], Germany [*V.B.* 13, 379] and Russia. Resemblance of some features of the disease to Žďár disease, equine encephalomyelitis, Borna disease, stachybotryotoxicosis and some types of forage poisoning, was discussed.

II. S. failed to produce clin. symptoms in horses with doses of 3-8 ml. of *L. grippo-typhosa* and *L. icterohaemorrhagiae* cultures injected

subcutaneously, intravenously, intravaginally and into the bladder, and also by repeated intraperitoneal and subcutaneous injection with doses of 10–50 ml. of organ suspensions from g.pigs and hamsters which had died from leptospirosis. These horses, however, yielded positive haemagglutination titres which were highest following intravenous and subcutaneous injection. When re-infections were discontinued titres decreased gradually but in some horses high titres persisted for a considerable time. Based on these findings the leptospiral aetiology of Zďár disease appeared doubtful.

III. Three horses given 120, 140 and 147 kg. of dried *Senecio erraticus barbaraeifolius* mixed with their hay ration over periods of 67, 77 and 87 days respectively, developed clin. symptoms resembling those of Zďár disease, a liver affection with nervous symptoms, on the aetiology of which there are conflicting views. [V.B. 20, 2059–2061]. The histopathology of liver lesions is described in considerable detail, the prominent feature of which was diffuse fibrosis following focal necrosis of liver cells. There are 18 photomicrographs of sections. A similar hepatotoxic effect was observed in rats. *Senecio* species grow abundantly in Zďár disease regions, amounting to up to 40% in hay from some meadows, particularly in the second crop. Ragwort and other plant poisonings in various countries, known by different names and resembling Zďár disease clinically and pathologically were discussed.—E.G.

BESEDA, M. (1957). Príspevok k pl'úcnjej adenomatóze oviec. [Pulmonary adenomatosis (jaagziekte) in sheep.]—*Vet. Čas.* 6, 208–213. [In Slovak. English, French, German and Russian summaries.] 1194

A form of pulmonary adenomatosis of unknown aetiology which resembled jaagziekte was diagnosed from lung material of 19 sheep. Lungworms were present in 3, *pasteurella* was isolated from 2 and *Corynebact. pyogenes* from one sheep. The animals which were between 6 weeks and 2 years of age died of emaciation and asphyxia during winter and spring. Histology and possible virus aetiology of the disease were discussed.—E.G.

VASIL', M. (1957). Štúdium etiologického vzťahu niektorých infekčných gastroenteritíd k enzootickej bronchopneumonií (chrípke) ošípaných. [Aetiological relationship between certain types of gastroenteritis and pneumonia in pigs.]—*Sborn. čes. Akad. zemědělsk. Věd. Vet. Med.* 30, 147–158. [In Slovak. English, German and Russian summaries.] 1195

The author examined 37 piglets which had died from a gastro-intestinal affection, the majority without respiratory symptoms. Leptospirosis was excluded microscopically. Using indigenous swine influenza virus strains as antigens, 3 serum samples yielded positive and 6 doubtful haemagglutination-inhibition reactions. Since influenza virus demonstration by mouse and chick embryo inoculation failed, it was concluded that positive and doubtful haemagglutination-inhibition reactions were probably the result of previous infection or of maternal transfer of immunity. It was shown experimentally that leptospiral antibodies did not inhibit influenza antigens. It was concluded that swine influenza virus was either not connected with this outbreak of gastro-intestinal disease or at least that the virus was not the only agent implicated.—E.G.

MEIER, K. (1957). Beitrag zur Ätiologie der Bronchopneumonia des Schweines. [Aetiology of porcine bronchopneumonia.]—*Mh. VetMed.* 12, 230–231. 1196

Having observed that bronchopneumonia did not develop in pigs kept in damp, unhygienic conditions and fed on swill, but did in a state-owned establishment where pigs were given mash with a low moisture content, M. considers that its primary cause is the inhalation of dust from cereal foods.—M.G.G.

BENDIXEN, H. C. (1957). Rhinitis chronica dystrophicans (s. atrophicans) suum. Beobachtungen über Vorkommen und Aetiology. [Occurrence and aetiology of chronic atrophic rhinitis in pigs.]—*Dtsch. tierärztl. Wschr.* 64, 330–333. 1197

In the course of 2½ years the noses of 3,571 pigs of about 6 months of age were examined in section. All animals had been born and reared in above-average conditions and had received good quality rations. The incidence of macroscopic rhinitis lesions was 1%. In 1,790 of these pigs, the occurrence of pneumonia, pleurisy and pericarditis corresponded to the degree of severity of the rhinitis lesions. The author concluded that atrophic rhinitis can be largely controlled by adequate feeding and that secondary bacterial or virus respiratory diseases may affect the clinical picture of rhinitis.

—E.V.L.

BLOOD, D. C. & JUBB, K. V. (1957). Exudative epidermitis of pigs.—*Aust. vet. J.* 33, 126–127. 1198

A single case is described. Lesions not previously recorded in the nervous system were

observed, including acute degeneration of Purkinje cells and sub-cortical demyelination of the cerebral cortex. This is the first report of the disease from Australia. [See also *V.B.* 26, 3587 & 3929.]—R. V. S. BAIN.

HEUNER, F. (1957). Weitere Beobachtungen über das Auftreten der Bauchflechte (*Pityriasis rosea*) der Ferkel. [**Incidence of pityriasis rosea in piglets.**]—*Tierärztl. Umsch.* 12, 354-355. 1199

In an inbred line of pigs 13 out of 18 litters had pityriasis rosea; after a new boar had been obtained the condition appeared in only 4 of 10 litters. A boar from this inbred line was mated with purchased sows; only one of their 13 litters had pityriasis rosea. When this boar was crossed with a purchased sow which had had pityriasis rosea, the condition developed in all of 5 litters. Healthy piglets did not develop it after they had been inoculated by skin scarification with skin material from affected piglets of the same litter. It is concluded that affected piglets have a hereditary predisposition for the disease. [See also *V.B.* 24, 629.]

—M.G.G.

MAGALHÃES, L. M. (1956). Colheita e valores normais, de interesse semiológico, do líquido cefalorraquiano do cão. [**Collection and normal values of cerebrospinal fluid in the dog.**]—*Arch. Esc. Vet. Minas Gerais* 9, 9-70. 1200

A detailed study of cerebrospinal fluid from 320 dogs.—R.M.

CARNAGHAN, R. B. A. (1958). **Keratoconjunctivitis in broiler chicks.**—*Vet. Rec.* 70, 35-37. [Author's summary copied *verbatim*.] 1201

An outbreak of keratoconjunctivitis in broilers is described. Exposure of chicks to ammonia fumes in the laboratory caused similar lesions in 6 out of 10 chicks and it is suggested that the presence of ammonia in broiler houses is the cause of field outbreaks of the disease.

GREATOREX, J. C. (1957). **Observations on the haematology of calves and various breeds of adult dairy cattle.**—*Brit. vet. J.* 113, 469-481. [Author's summary modified.] 1202

G. discussed the influence of age, environment, seasonal changes, pregnancy, lactation and breed on the blood picture of cattle as revealed by a study in 233 calves and 49 adult cattle selected from five dairy breeds.

COMAR, C. L., RUSSELL, R. S. & WASSERMAN, R. H. (1957). **Strontium-calcium movement from soil to man.**—*Science* 126, 485-492. [Authors' summary modified.] 1203

The calcium reservoirs of the biosphere are becoming labelled with Sr^{90} from nuclear weapons. These reservoirs include the human and animal skeleton, milk, vegetation, the upper layers of soil, and the waters. The degree of labelling is governed by the dilution that occurs, and the differential behaviour of Ca and Sr in the food chain. This differential behaviour gives a factor of protection against Sr^{90} in soil and vegetation that may be as high as 25 for the newborn and is probably not less than 6 for adults, depending on food habits. The physiological steps that are important in the movement of the two elements in the biosphere are described to provide a basis for increasing the discrimination against Sr in favour of Ca. Some aspects of agricultural practice are discussed from this standpoint.

ANON. (1957). **Disposal of radioactive waste.**—*Chron. World Hlth Org.* 11, 255-260. 1204

Gaseous wastes are discharged into the atmosphere through stacks 60-100 metres high, usually after filtration and scrubbing. Liquid wastes which are only slightly radioactive are allowed to soak into the ground or are discharged into the sea or a river after a brief period of storage or after removal of the long-lived radioisotopes. Solid wastes which are slightly radioactive are burned, or buried or dumped at sea in containers. All highly radioactive wastes are stored permanently in shielded tanks. The possibilities are being explored of concentrating radioactive elements in a completely insoluble form, such as roasted clay, which could then be buried. [See also *V.B.* 27, 267.]—M.G.G.

ANON. (1957). **Radiation and health.**—*Chron. World Hlth Org.* 11, 247-254. 1205

A brief review of the effects of radiation on the living body, the different distribution of certain radioisotopes in the body, and the safety apparatus and clothing used by workers exposed to radiation.—M.G.G.

DYCE, K. M. (1957). **Veterinary radiology: the kidney.**—*X-Ray Focus* 1, No. 4. pp. 2-3. 1206

A brief account of intravenous pyelography and a double-contrast technique as applied to the dog.—R.M.

POISONS AND POISONING

LINDEMANN, G. (1957). **A lipid material in bone and teeth in experimental chronic fluorosis.** —*Nature, Lond.* **180**, 926. **1207**

In experimental chronic fluorosis, dark blue granules in paraffin and colloidin sections of decalcified bone and teeth have been thought to be either calcium fluoride or merely a pathological calcification. The present investigations, however, using X-ray diffraction, phase-contrast microscopy and histochemical techniques, suggest that these granules consist mainly of lipid material.—E.V.L.

BESSIS, M. & BRETON-GORIUS, J. (1957). Granules ferrugineux dans les cellules macrophages et les érythrocytes au cours du saturnisme expérimental. Examen du microscope électronique. [**Iron granules in macrophages and erythrocytes in experimental lead poisoning.**] —*C. R. Soc. Biol., Paris* **151**, 275-276. **1208**

Lead poisoning was produced in rats by intraperitoneal injection of the subacetate. Masses of iron granules were observed in the r.b.c. and in the spleen macrophages.

—T.E.G.R.

BOULDING, J. E. & BAKER, R. A. (1957). **The treatment of metal poisoning with penicillamine.**—*Lancet* November 16th, 985. **1209**

Four cases of metal poisoning in human beings are reported in which the chelating agent penicillamine was successfully used in high dosage. Penicillamine appears to bring about a rapid diuresis of copper, lead and iron in poisoning with these metals.—J. A. NICHOLSON.

MCCONNELL, W. C. (1957). **Oil field problems confronting the veterinarian.**—*Vet. Med.* **52**, 159-163. **1210**

The legal aspects of pollution of streams and the tolerance of farm animals for minerals in drinking water are discussed. Symptoms of salt water poisoning, P.M. findings and treatment are described. Poisoning by ingredients of crude oil and by heavy metals, principally lead, from discarded containers, paint, pipe joint compound, and similar products, may also occur in oil fields.—T.E.G.R.

WEST, J. L. (1957). **Disinfectant poisoning in chicks.**—*Vet. Med.* **52**, 40-42. **1211**

Coal-tar poisoning was diagnosed in chicks aged 3-6 weeks in five flocks. Symptoms were: dyspnoea, depression, weakness and subcutaneous oedema. Anasarca, ascites, cirrhosis of the

liver, hydropericardium, hypertrophy of the heart and nephrosis were observed P.M. Disinfectants and creosote, as wood preservative, are suspected causes.—T.E.G.R.

GUERIN, L. A. (1957). **Nitrate poisoning in cattle — a review.** —*Irish vet. J.* **11**, 156-161. **1212**

An increase in the number of cases of nitrate poisoning in cattle is reported. It appears that cattle are highly susceptible to compounds forming methaemoglobin. All plants readily absorb ammonium nitrate, but nitrate levels in plants high enough to be toxic probably represent abnormal states arising from the excessive use of nitrate as a fertilizer or as a result of drought or the rapid formation of nitrate by soil organisms during the period of plant growth. A 4% aqueous solution of methylene blue injected i/v at the rate of 2 g. per 500 lb. live weight, giving not less than 2 g., is the best antidote. Death occurs very quickly after the first appearance of symptoms and treatment cannot be delayed.—J. A. NICHOLSON.

DODD, D. C. & COUP, M. R. (1957). **Poisoning of cattle by certain nitrate-containing plants.** —*N.Z. vet. J.* **5**, 51-54. **1213**

The deaths of several dairy cows on 3 farms were due to ingestion of immature turnip tops and a weed, redroot (*Amaranthus retroflexus*): calculated on a dry-matter basis the turnip tops contained up to 9.1% nitrate and the redroot 5.9%. Deaths occurred suddenly without affected cows showing clinical signs, except in a few cases where the cows were seen to be staggering or down; prompt treatment with methylene blue, 250 ml. 1% solution i/v, was frequently successful.—E.V.L.

MULLENAX, C. H. (1957). **A dietary cause of hair loss in Bahamian livestock.**—*J. Amer. vet. med. Ass.* **131**, 302. **1214**

Complete loss of hair occurs in horses (mane and tail) and in pigs which have fed on the leaves and pods of a leguminous tree, *Leucaena glauca*. The hair grows again after a change of diet. [The condition has also been reported from Fiji and Indonesia. Cattle, sheep and goats are not affected. (See also *V.B.* **20**, 160 & **21**, 3323.)]

—M.G.G.

SUND, J. M., WRIGHT, M. J. & SIMON, J. (1957). **Weeds containing nitrates cause abortion in cattle.** —*Agron. J.* **49**, 278-279. **1215**

In Wisconsin abortions had occurred in a

brucellosis-free area which were not attributable to brucellosis, vibriosis or leptospirosis. It was observed that the abortions occurred in cows grazing weedy pastures and not in cows grazing reseeded clean pastures. A trial was carried out by freeing part of a pasture from weeds by spraying with weed killers (2,4-D and 2,4,5-T). 8 heifers were grazed on the treated pastures and 12 on the untreated. Ten of the 12 on the weedy pastures aborted while only one of the 8 on the clean pastures did so. Chemical analysis of a number of different species of weeds indicated that some species had a high nitrate content. Lesions in the aborted calves were suggestive of those associated with methaemoglobinaemia. Four cows were fed experimentally with various amounts (no details given) of KNO_3 and NaNO_3 . Two of these aborted. It is suggested that a high nitrate content of the ration may cause methaemoglobinaemia which may produce anoxia of the placental and foetal tissues resulting in abortion. Further studies are in progress.

LEE, H. J., KUCHEL, R. E., GOOD, B. F. & TROWBRIDGE, R. F. (1957). **The aetiology of phalaris staggers in sheep. III. The preventive effect of various oral dose rates of cobalt. IV. The site of preventive action and its specificity to cobalt.**—*Aust. J. agric. Res.* 8, 494-501 & 502-511. [Authors' summaries modified.] 1216

I. The earlier finding that cobalt administered orally in adequate amounts completely prevents phalaris staggers in sheep grazing *Phalaris tuberosa* has been confirmed. Weekly doses of 7 mg. cobalt did not always afford protection but 28 mg. (or more) at weekly (or more frequent) intervals were invariably effective. Extremely small supplements (0.05 mg.) were effective when administered twice daily, but when the interval between doses was 4 weeks even very large amounts (280 mg.) did not prevent staggers. The principles that govern the preventive administration of cobalt are discussed and relevant analytical data are presented.

II. The preventive activity of cobalt against phalaris staggers in the sheep is very probably restricted to the rumen. In this disease cobalt does not act within the tissue cells nor within the intestines; cobalt injected i/v is without effect. The destruction of the toxic substance present in the phalaris does not depend on the production of vitamin B_{12} by the rumen flora. The probability that cobalt acts by ensuring the proliferation in the rumen of micro-organisms which accomplish this detoxication is discussed. The preventive action is specific to cobalt admin-

istered orally; frequent doses of a supplement that provide the daily equivalent of 10 mg. each of boron, copper, iron, magnesium, manganese, molybdenum, nickel, titanium, and zinc fail to prevent the disease.

BENNETTS, H. W. (1957). **Lupin poisoning of sheep in Western Australia.**—*Aust. vet. J.* 33, 277-283. [Author's summary modified.] 1217

The occurrence of lupin poisoning, resulting from the ingestion of the shed seeds of both *Lupinus varius* and *L. angustifolius*, is recorded and described. The acute alkaloid poisoning has been seen in Western Australia for many years, but, in contrast with overseas observations, has rarely been fatal. Lupinosis, a separate condition, has been encountered only recently. Attempts to reproduce lupinosis in laboratory animals and sheep by feeding them harvested seed of *L. varius* were successful. The pathogenesis of lupinosis, and reasons for its recent advent are discussed. Lupinosis may be a result of a dietary deficiency rather than a direct intoxication. The possibility that it results from the ingestion of parts of the plant other than the seed will be investigated.

SELYE, H. (1957). **Acquisition of resistance to osteolathyrism during adaptation to cold.**—*Science* 126, 612. 1218

Of 30 rats each given orally 12 mg. of aminoacetonitrile hydrosulphate daily for 16 days, 10 were kept at 0°C. for 10 days before and during treatment, 10 were kept at 0°C. during treatment only, and the 10 controls kept at room temp. P.M. examination revealed severe osteolathyrism in the controls, only traces of this condition in the second group, and none in the first group. In the rats exposed to cold the thyroid showed cellular hypertrophy and hyperplasia. It is concluded that osteolathyrism was prevented by increased secretion of thyroxine. —M.G.G.

HALL, W. T. K. (1957). **Toxicity of the leaves of *Macrozamia* spp. for cattle.**—*Qd J. agric. Sci.* 14, 41-52. [Author's summary slightly modified.] 1219

An account of feeding tests with three groups of cattle is given. One group was fed the leaves of *Macrozamia pauli guihelmi*, a second group a mixture of leaves of *M. douglasii* and *M. spiralis*, and a third group the leaves of *M. spiralis*. Two distinct syndromes were produced. One was liver damage seen in animals in the group fed *M. pauli guihelmi*, and then only when fresh green leaves were used. The other was an ataxia seen in

animals in all three groups. This ataxia affected only the hindquarters and was characterized by a swaying to both left and right and a dropping of the rump. This was associated, in particular, with poorly controlled movements of the tibiotarsal and metatarsophalangeal articulations. No lesions to account for this disability were found. The toxicity of the leaves is evidently lowered rapidly by drying and withering on exposure to air.

CASE, A. A. (1957). **Photosensitization syndrome in cattle, sheep and swine.**—*N. Amer. Vet.* **38**, 161-165. 1220

Photosensitization occurred in a herd of cattle at pasture, where mustard was plentiful, after a spell of dry warm weather followed by heavy rains. Cows in good condition were most severely affected and, contrary to common experience, strawberry or roan coloured animals

were more susceptible than those with white patches. The condition was also observed in pigs at pasture under similar conditions; the white parts of the body were affected. Pigs on rape pasture were also affected. Photosensitization in sheep is discussed. It is stated that black faced sheep are as susceptible as white faced ones. A list of plants which may be associated with photosensitization is given.—T.E.G.R.

JOLLY, D. W. (1957). **The toxicity of organic phosphorus insecticides.**—*Vet. Rec.* **69**, 796-800. 1221

In this detailed paper J. described the symptoms of poisoning by organic phosphorus compounds as seen in cattle, sheep, pigs, dogs and poultry. He dealt with treatment by atropine and showed that blood cholinesterase estimation provides an indication of intoxication long before the onset of clinical symptoms.—D. POYNTER.

See also absts. 1185-1166 (salt tolerance in sheep and turkeys); 1193 (senecio poisoning in horses).

PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under the appropriate disease)

ANON. (1957). **British Standard recommended common names for pesticides.** pp. 31. London: British Standards Institution. 7s. 6d. [B.S. 1831.] 1222

A list of short coined common names which are recommended for easy identification of well-established pest control chemicals whose chemical names are long and relatively cumbersome to pronounce. The list correlates the recommended common name with the full chemical name and chemical formula and with other non-proprietary names that have been used, and classifies the products in four groups: Insecticides and acaricides, fungicides, herbicides and rodenticides. An index is provided.

HOERLEIN, A. B. & MARSH, C. L. (1957). **The action of chlorpromazine hydrochloride in calves.**—*J. Amer. vet. med. Ass.* **131**, 227-230. [Authors' summary slightly modified.] 1223

Newly weaned beef calves treated with chlorpromazine hydrochloride were much less disturbed by the shock of weaning than untreated control calves. In three trials, the average weight gain during the week following weaning was greater in the treated than in untreated calves. A single dose (1 mg./kg. body wt.) of the drug produced tranquillizing action without signs of intoxication for up to 44 hours.

STURTEVANT, F. M. & DRILL, V. A. (1957). **Tranquillizing drugs and morphine-mania in cats.**—*Nature, Lond.* **179**, 1253. 1224

Morphine-mania was consistently obtained in 13 cats after s/c injection of 20 mg./kg. Both chlorpromazine and reserpine were found to lessen the severity of morphine excitement though the mydriatic effect of morphine predominated over the meiotic effect of the tranquillizers, except when reserpine was given several hours after morphine.—E.V.L.

SAAR, C. (1957). **Erfahrungen mit dem Antiepilepticum Primidon beim Hunde. [Experience with the antiepileptic primidone in dogs.]**—*Berl. Münch. tierärztl. Wschr.* **70**, 323-326. [English summary.] 1225

Primidone, (5-ethyl-5-phenylhexahydro-pyrimidine-4:6-dione) in a daily dosage of 15-20 mg./kg., increased after a week to 40-50 mg./kg., and thereafter adjusted to an average minimal effective dose of 35-45 mg./kg., given in 2-3 portions throughout the day, produced complete control in 17 dogs and 2 cats out of a total of 24 subject to epileptiform attacks which had proved refractory to other anticonvulsant drugs. Another 3 animals showed improvement. Among 28 dogs with nervous symptoms in the course of distemper and "hard pad" disease, complete control was achieved in 10 out of 12 showing

masticatory and epileptiform attacks, while no favourable effect was seen in any of 8 cases showing myoclonic attacks, paresis and paralysis in the course of myelitis; in 8 cases with encephalomyelitis a favourable effect on masticatory and epileptiform, but not on myoclonic, attacks was seen in 7. Continued medication was necessary in all except one of the animals with epileptiform attacks, while a permanent effect was achieved in all except three of the distemper and "hard pad" group. No toxic effects were observed even on prolonged dosing.

—G. P. MARSHALL.

KUEBLER, W. F., JR. (1957). **A comparison between the serum inorganic iodine levels of feeding potassium and cuprous iodide, and copper retention.**—*J. Dairy Sci.* **40**, 1087-1092. [Author's summary modified.] 1226

When 1.15 g. of iodine, derived in one case from potassium iodide and in the other from cuprous iodide, was administered orally to calves daily for seven days, cuprous iodide maintained a slightly higher serum inorganic iodide level throughout the experiment. A serum inorganic iodide level of at least 500 $\mu\text{g.}\%$ can be maintained in calves by the oral feeding of 1.15 g. of iodide, derived either from potassium iodide or from cuprous iodide, at one-day intervals. The rate of elimination of iodide, derived from potassium iodide and cuprous iodide, and picked up in the inorganic iodide serum fraction over the seven-day dosage regimen, was judged equivalent. The rate of iodide elimination can be defined approximately as a linear function of the log. serum inorganic iodide level upon time, over the 9 days after cessation of treatment. Serum copper levels for the group fed cuprous iodide were somewhat higher than those for the potassium iodide group at the seven-day peak iodide level; however, the serum copper level was well within the range of that for normal animals. The livers of calves on a cuprous iodide regimen, furnishing iodide at the maximum levels currently used in the systemic treatment of mycotic infections, and for twice the usual treatment time, had lower copper concentrations than those of cattle evidencing copper toxicity. No evidence of toxicity from iodism or hyperthyroidism was noted in any of the test animals, nor were signs of copper toxicity or other adverse effects noted in the group fed cuprous iodide. Cuprous iodide, besides being the more stable compound and more compatible with feed ingredients, was much more palatable than potassium iodide.

COVER, M. S. & LUDWIG, D. R. (1957). **Antibiotic levels in the serum and tissues of**

chickens following various therapeutic dosages.—*Poult. Sci.* **36**, 993-999. [Authors' summary modified.] 1227

The serum levels and some tissue levels of procaine penicillin G, streptomycin sulphate and chlortetracycline after administration by various routes and at graded dosage levels are reported. The detectable levels of all antibiotics are of relatively short duration after single oral or single intramuscular administration. When streptomycin was administered as an aerosol at the recommended dosage levels, there were no detectable levels in the serum of fowls though the premises were thoroughly saturated. Penicillin V produced greater and more prolonged levels than procaine penicillin G. No procaine penicillin G was detected in or on the r.b.c. but it was present in the blood serum. A small amount of penicillin was detected in the blood clot but this was attributed to its serum content.

COLETOS, P.-J., BRETEY, J., LAROCHE, M.-J., ORIOU, E. & DE REGEL, N. (1957). **Répartition de la cycloserine dans le sérum et les viscères, chez le chimpanzé, le rhesus, le cynocéphale, le papion, le lapin, le cobaye et la poule. [Distribution of cycloserine in serum and organs of chimpanzees, monkeys, rabbits, guinea-pigs and fowls.]**—*Ann. Inst. Pasteur* **93**, 563-580. [Abst. from English summary.] 1228

The selective anti-tuberculous activity of cycloserine in human beings and anthropoids (chimpanzees) is due to a renal excretion threshold of 20 $\mu\text{g.}/\text{ml.}$ for this antibiotic. In lower animals (g.pigs, rabbits, etc.) cycloserine passes rapidly through the body, and some organs (spleen, liver, lungs) are impregnated only for a short time.

GODING, J. R. & DENTON, D. A. (1957). **The effects of adrenal insufficiency and overdosage with DOCA on bilaterally adrenalectomized sheep.**—*Aust. J. exp. Biol. med. Sci.* **35**, 301-320. [Authors' summary modified.] 1229

Bilaterally adrenalectomized sheep can be maintained in good condition indefinitely if given a daily supplement of cortisone (25 mg.) and desoxycorticosterone acetate (DOCA) (5-10 mg.). Withdrawal of this supplement caused severe adrenal insufficiency within 2-4 days. The plasma $\text{Na}^+:\text{K}^+$ fell and there was a large increase in Na^+ loss in the urine and faeces. There was an external Na^+ deficit of 136-489 m.equiv. In sheep with a permanent unilateral parotid fistula, the salivary $\text{Na}^+:\text{K}^+$ ratio rose. A striking feature of adrenal insuffi-

ciency was the large diuresis which occurred during the first 24-48 hours. DOCA was the more critical component of the hormone supplement: withdrawal of DOCA alone caused changes of similar magnitude to withdrawal of both DOCA and cortisone. Increasing the DOCA supplement caused a rise of plasma $\text{Na}^+:\text{K}^+$ ratio and decrease of Na^+ excretion in the urine and faeces. In the animals with a parotid fistula, the salivary $\text{Na}^+:\text{K}^+$ ratio fell, and the salivary secretion rose by 20-50%. Whereas the salivary $\text{Na}^+:\text{K}^+$ ratio remained depressed during 7-10 days of increased DOCA dosage, the urinary Na^+ excretion on one occasion rose again after 7 days.

See also absts. 972 (resistance of *Staph. aureus* to antibiotics); 973 (prednisone in bovine mastitis); 1027 (bovine contagious pleuropneumonia); 1030 (trichomoniasis in bulls); 1033 (coccidiosis); 1086-1093 & 1097-1098 (parasiticides); 1099, 1109, 1111, 1120-1121, 1124, 1127-1128, 1132, 1134 & 1136-1137 (anthelmintics); 1140 (fungal extracts for treatment of Sticker's sarcoma); 1149-1154 (growth factors); 1293 (book, veterinary anaesthesia).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

JENSEN, L. S. & MATSON, W. E. (1957). **Enlargement of avian eye by subjecting chicks to continuous incandescent illumination.**—*Science* 125, 741. 1231

Eight chicks were exposed to continuous incandescent illumination until the age of 6 weeks, and eight received such light for 12 hours daily. The eyeballs from chicks of the first group weighed 38% more, had a diameter 2.4 mm. larger and contained twice as much fluid as the eyeballs from chicks of the second group. The differences in depth, however, and in dry wt. expressed as a percentage of the live body wt. were only slight. [See also *V.B.* 19, 2491.]—M.G.G.

YEATES, N. T. M. (1957). **Photoperiodicity in cattle. II. The equatorial light environment and its effect on the coat of European cattle.**—*Aust. J. agric. Res.* 8, 733-739. [Author's summary modified.] 1232

Thirteen cattle of European breeds were maintained for up to 21 months in a light environment artificially adjusted to provide 12 hours 50 min. of light daily, so simulating the equatorial photoperiod. The initial coat reaction of several groups of these animals differed according to the season in which they entered the experiment. Thus transfers in the spring and autumn were followed by complete shedding; those in winter by a rapid partial shedding; and those in the summer by rapid growth of hair. On adaptation to the new environment, however, all the groups eventually grew, and thereafter permanently maintained, a similar coat, characterized by intermediate length and

NICOL, T. & BILBEY, D. L. J. (1957). **Reversal by diethylstilboestrol of the depressant effect of cortisone on the phagocytic activity of the reticulo-endothelial system.**—*Nature, Lond.* 179, 1137-1138. 1230

Carbon of particle size 250 Å was injected i/v into mice. Measurement of its rate of disappearance revealed that cortisone depressed the phagocytic index, but when cortisone treatment stopped, its depressant effect could be reversed by diethylstilboestrol. Moreover, when the 2 drugs were administered separately but at the same time, phagocytic activity was stimulated. The results were verified microscopically. —M.G.G.

furly appearance. The experiments show that the equatorial photoperiod eliminates the natural coat cycle of European breeds of cattle and tends to maintain them in a heat-retaining type of coat.

CHAPMAN, R. E. & YOUNG, S. S. Y. (1957). **A study of wool production per unit area of skin in Australian Merino sheep.**—*Aust. J. agric. Res.* 8, 723-732. [Authors' summary modified.] 1233

A marked variation in weight of wool per unit area was found over the body regions of sheep. A distinct dorsoventral gradient, and some anteroposterior gradients were observed. Sampling positions having wool weights per unit area close to the mean over the body were situated on a line from mid-shoulder to mid-thigh positions. The mean wool production per unit area varied from sheep to sheep and from strain to strain. These differences were large and highly significant irrespective of level of feeding.

ROBERTS, N. F. & DUNLOP, A. A. (1957). **Relations between crimp and fineness in Australian Merinos.**—*Aust. J. agric. Res.* 8, 524-546. 1234

The relationship of mean fibre diameter to number of crimps per inch in the mid-side region was analysed during several seasons. The overall negative relationship between the two measurements which is commonly accepted was affected by age, strain and environment. Increasing age had little effect on average crimp but in some strains diameter was increased. A

moderately adverse environment usually affected crimps only slightly but reduced diameters markedly. Hence the average diameter associated with a given crimp could vary considerably with age or environment. It is shown that the change of diameter indicated by a given change of crimp within one flock varies from strain to strain, but on the average it is much less than the changes in diameter that accompany crimp differences between flocks, either from different strains or from different environments.—M. H. HARDY.

WALKER, C. A. (1957). Studies of the cattle of Northern Rhodesia. II. The apocrine gland population of the skin of Northern Rhodesian cattle and its connexion with the heat toleration coefficient.—*J. agric. Sci.* 49, 401-404. [Author's summary modified.] [For part I, see *V.B.* 28, 250.] 1235

W. studied the apocrine gland density in the skin of the three breeds of cattle indigenous to Northern Rhodesia, and compared these breeds with the Africander. The Angoni had the greatest density of glands/sq. cm. and this density agreed closely with mean figures quoted for *Bos indicus*. The Barotse and the Tonga, both Sanga types, had a significantly lower gland density, but significantly greater than the Africander which is a relict zebu form. Dowling's finding that the decrease in the density of the glands with age is due to the "spread" of the constant number laid down at birth by the growth of the skin was confirmed. A very close correlation between the density of the apocrine glands and the heat toleration coefficient was established.

From a consideration of previous work, it is concluded that the density of the apocrine gland population is only one of the factors concerned in the control of thermo-neutrality by cattle; in this there is some disagreement with the conclusions reached by Australian workers.

BERMAN, A. (1957). Influence of some factors on the relative evaporation rate from the skin of cattle.—*Nature, Lond.* 179, 1256. 1236

Evaporation rates in cows were high at the following parts, in diminishing order: muzzle, side of neck, vulva, ventral aspect of the neck and anterior part of the flank. They were low at the forehead, abdomen and udder; white patches had slower evaporation rates than black. Clipping significantly increased evaporation rate. Significant variations observed in different cows led to the conclusion that a high evaporation rate is a characteristic transmissible by the sire.—T.E.G.R.

REID, J. T., BALCH, C. C., HEAD, M. J. & STROUD, J. W. (1957). Use of antipyrene and N-acetyl 4-aminoantipyrene in the measurement of body water and the intraluminal water of the gastro-intestinal tract of living cattle.—*Nature, Lond.* 179, 1034. 1237

Estimates of the water content of living cattle by the use of antipyrene was always greater than estimates obtained by the use of N-acetyl 4-aminoantipyrene. The difference was approx. equal to the probable amount of water in the gastro-intestinal tract.—R.M.

BIANCA, W. (1957). The effect of repeated short exposures to heat on the volume and hydration of the blood of the calf.—*Brit. vet. J.* 113, 227-241. 1238

Three 4-month-old Ayrshire calves were exposed to a temperature of 35°C. dry bulb, and 27.6°C. wet bulb for up to 5 hours daily over an experimental period of 3 weeks. Three similar calves were kept as controls. The exposure to heat had no adverse effect on the weight gains of the calves. Studies at 5-day intervals, on blood volume, plasma volume, cell volume, cell percentages, plasma solids concentration, total plasma solids and total plasma water revealed that during the first 5 days there was a haemoconcentration in the experimental calves mainly due to a rise in the volume of circulating cells and a loss of plasma water. Plasma volume increased again after this and the haemoconcentration ceased. The rectal temp. rose on exposure to heat and this was accompanied by increase in heart and respiration rates. These increases were more striking during the first 10 days of the experiment. B. concluded that the initial haemoconcentration was due to stress in general and not to heat in particular.

—E. J. CASTLE.

DE SOUZA, R. (1956). Efeito de substâncias parassimpaticomiméticas sobre a secreção salivar de *Gallus domesticus*. [Effect of parasympathetic stimulants on the secretion of saliva in the fowl.]—*Arch. Esc. Vet. Minas Gerais* 9, 169-218. [English summary.] 1239

Saliva was collected by means of a cannula inserted into the oesophagus. The author studied some chemical and physical properties of normal saliva and saliva collected after injections of pilocarpine, physostigmine, acetylcholine and carbamylcholine.—R.M.

LABOUCHE, C. (1957). Physiologie de la lactation en milieu tropical. I. Étude des courbes de lactation recueillies en zone subguinéenne de la presqu'île du Cap Vert (Sénégal).

[Physiology of lactation in cattle in a tropical climate.]-*Rev. Elev.* 10, 27-39. [English and Spanish summaries.] 1240

Lactation in crossbred (*Bos indicus* × *B. taurus*) cows was studied during 1953-55. There was a stable period during the first 8 weeks, followed by a gradual fall until the 25th week. Thereafter the milk yield remained at the same level (about 50% of that during the first week) until the 35th week. The increase in yield observed during the first 8 weeks in temperate climates or in certain tropical regions did not occur.—T.E.G.R. 1240

PILIPENKO, M. E. (1957). [Haemoglobin content and erythrocyte count in chicks in relation to conditions of incubation.]-*Sechenov, J. Physiol.* 43, 970-973. [In Russian, English summary.] 1241

The haemoglobin content and erythrocyte count were measured in chick embryos from the 9th day of incubation and in newly-hatched chicks up to the 30th day of life. There were no significant differences in the figures obtained between naturally incubated and artificially incubated embryos and chicks, providing the correct conditions for artificial incubation were present. The figures were a potential basis for a method of determining faulty incubation.—R.M. 1241

MAGAREY, F. R. & STEHBENS, W. E. (1957). The blood pressure of sheep.—*Aust. J. exp. Biol. med. Sci.* 35, 347-351. [Authors' summary modified.] 1242

By means of a capacitance manometer 52 intra-arterial blood pressure recordings have been made on 40 sheep. The sheep were Merino crossbred ewes and wethers between about 3 months and 3 years old. The mean pressures in the carotid and femoral arteries were, respectively, systolic 135, 151, diastolic 112, 114, mean 122, 127, and pulse pressures 25, 37 mm. Hg. 1242

HATCHER, J. D. & JENNINGS, D. B. (1957). The measurement of the rate of blood flow in the calf and paw of dogs by the venous occlusion plethysmograph technique with a note on the effects of intravenous adrenaline and noradrenaline.—*Canad. J. Biochem. Physiol.* 35, 491-496. 1243

Anatomical measurements on 9 "calf" segments and 6 paw segments from either forelegs or hindlegs of dogs, when studied in relation to venous occlusion plethysmographic measurements of blood flow in these areas of other anaesthetized dogs, showed that the plethysmograph measurements in the "calf" give an index of muscle blood flow, and those in the paw an

index of skin blood flow. The effect of intravenous infusions of adrenaline and noradrenaline were similar to those observed in man. The average rate of blood flow in the "calf" and paw of dogs is greater than the average flow in comparable areas in man, but in interpreting the differences consideration must be given to the effects of anaesthetic.—A. GREIG. 1243

EVANS, J. V. & PHILLIPSON, A. T. (1957). Electrolyte concentrations in the erythrocytes of the goat and ox.—*J. Physiol.* 139, 87-96. [Authors' summary modified.] 1244

Two distinct types of animal were differentiated by the concentrations of potassium in the blood of British and Middle East breeds of goat. The type with a low concentration was rare in two British breeds but common in the Middle East breeds. Two types of animal were not found in the ox but it is suggested that a more extensive examination of breeds may reveal a similar polymorphism. The variation in the concentration of potassium in the r.b.c. between cattle was greater than the variation between measurements in the same animal. The blood picture is recorded in a cow with a condition clinically indistinguishable from "grass staggers". 1244

ASHDOWN, R. R. (1957). Adherences between penis and sheath in castrated oxen.—*J. Anat., Lond.* 91, 580. 1245

Castration inhibits the separation between the penis and sheath. A study of 207 castrated calves aged 1½-3½ years showed that in 27% the penis and sheath were completely separate; in 29% they were fused over the collum glandis only; in 41% there was considerable separation over the apex, and in 8% separation only in the region of the urethral process. 1245

—J. A. NICHOLSON. 1245

WEISS, P. & MATOLTSY, A. G. (1957). Absence of wound healing in young chick embryos.—*Nature, Lond.* 180, 854. 1246

A study of the healing of skin wounds in chick embryos from 5 days incubation to hatching is reported. From 12 days onwards the standard pattern of epidermal regeneration was observed but prior to the twelfth day, the wound remained raw, owing to the marked incapacity of its epidermis to spread over the wound surface in spite of high mitotic activity near the wound margin.—J. A. NICHOLSON. 1246

VERHAART, W. J. C. & SOPERS-JURGENS, M. R. (1957). Aspects of the comparative anatomy of the mammalian brain system.—*Acta*

morph. neerl-scand. 1, 246-255. [In English.] **1247**

A description of the cerebral peduncle, the medial lemniscus and Wallenberg's secondary dorsal trigeminal tract in the goat, pig, cow, horse, rabbit and rat.—R.M.

SMOLLIICH, A. (1957). Zum Vorkommen von Beizwischennieren beim Rind. [**Occurrence of accessory adrenal cortical tissue in cattle.**] —*Zbl. VetMed.* 4, 811-820. [English, French and Spanish summaries. English summary modified.] **1248**

A total of 300 pairs of adrenals from cattle of all ages, as well as from 12 fetuses of various ages, were examined macroscopically for accessory cortical tissue. Single, and—more rarely—multiple, accessory cortical foci were found in 17% of calves, 45% of heifers, and 36% of adult cattle. They consisted of cortical nodules with autonomous zone formation of their cells. Their size ranged from that of a pin's head up to 12 mm. diam. and was in general larger in the larger adrenals. The difficulty in distinguishing the nodules from neoplastic cortical foci is pointed out. The genesis of the accessory cortical nodules is briefly discussed.

WAITE, R. & BLACKBURN, P. S. (1957). The chemical composition and the cell count of milk.—*J. Dairy Res.* 24, 328-339. [Authors' summary modified.] **1249**

The mixed evening and morning milk from 360 cows, each cow-being sampled 6 times during its lactation, was analysed chemically and for total and differential cell counts. Similar analyses were made of 823 samples of milk from a creamery. Total cell counts varied from less

than 10,000 to 5,000,000/ml. and there was considerable variation in the chemical composition of samples containing similar numbers and types of cells. The proportion of polymorph cells increased rapidly with increasing total count. Stage of lactation had little effect on the number of cells, but samples from cows in very early and very late lactation were avoided. The total cell count was lowest from the 70th to 130th day of lactation with a tendency to rise after the 130th day. Both total and polymorph cell counts increased sharply with lactation number but remained fairly constant after the seventh lactation. As the total cell count rose to an average of 500,000/ml. there was a fall in daily milk yield and a big fall (0.25%) in solids-not-fat content. The latter was the result of a steady drop in lactose content, the casein content being affected only by counts approaching 1,000,000 per ml. Increasing cell count had no effect on fat content. Possible reasons for the relatively small effect of high cell counts on chemical composition in some samples are discussed. It is concluded that subclinical mastitis, as evidenced by cell count, lowers the solids-not-fat content.

MCINDOE, W. M. (1957). A lipophosphoprotein complex in the plasma of the domestic fowl. —*Biochem. J.* 67, No. 3. p. 19P - 20P. of Proceedings. [Abst. from abst.] **1250**

A lipophosphoprotein complex can be readily precipitated from the plasma of laying hens by dilution with 5-10 vol. water.

The appearance of the lipoprotein just before the commencement of egg-laying, its disappearance in non-laying birds and its composition all point to its being a constituent of egg yolk. Some of its properties are shared with "lipovitellin".

See also absts. 1294 (book, anatomy of domestic animals); 1295 (book, alimentary tract of ruminants).

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

OLIVANT, J. M. (1957). Studies in bacteriological meat inspection. I. The use of plating methods for the detection of non-specific infection in animal tissue.—*Vet. Rec.* 69, 1003-1007. [Author's summary modified.] **1251**

A comparison is made of the plating methods used in the routine demonstration of non-specific infection in meat. The method finally adopted is as follows:—Inoculation of samples of 1-2 g. of finely cut, but not severed, tissue into tubes of melted and cooled blood agar, followed by mixing and plate pouring. Plates are incubated for 48 hours at 37°C. At the same time samples of 1-2 g. are inoculated for shake culture into

1% glucose agar and incubated for 24 hours at 37°C. Subcultures are made when tubes show no growth and whenever plating methods fail to reveal infection. By this method, 15% of muscle samples, 26% of spleen samples, 35% of samples from prescapular lymph nodes, and 95% of liver samples were found infected with non-pathogenic bacteria. Standards are suggested for the application of these results to routine bacteriological meat inspection.

LEINATI, L. (1957). Untersuchungen über die Reifung des Fleisches von Schlachttieren mit der elektrophoretischen und chromatographischen Methode. [Study of the ripening of

carcass meat by electrophoretic and chromatographic methods.]—*Arch. exp. VetMed.* **11**, 13-21. **1252**

Quantitative and qualitative studies were made by electrophoretic and chromatographic methods on the amino-acids present in beef as P.M. ripening occurred. It is concluded that the degree of protein-fractionation may be related to the condition of the animal at the time of slaughter, to a lesser degree to age, and that it follows no uniform pattern. Similar experiments were conducted on freshly killed and on refrigerated poultry carcasses.—H. THORNTON.

GINSBERG, A., HILL, E. C. & GRIEVE, J. M. (1957). **Oxytetracycline and its use as a meat preservative in underdeveloped countries.**—*Vet. Rec.* **69**, 983-993. [Authors' summary modified.] **1253**

Fifteen cattle and 13 sheep were treated with oxytetracycline by anti-mortem i/p injection, and spraying and dipping of the carcasses. The meat, exposed to varying and severe tropical or semi-tropical conditions, was examined after 24, 48, and 72 hours. The antibiotic improved the keeping quality of the meat, beef in particular, extending its fitness for human consumption from 48 to 72 hours. The i/p method, although the most effective in controlling deep spoilage, is impracticable in large abattoirs where time is short. The spray method, in its overall effect equal to the i/p, and more efficient in the inhibition of surface spoilage, is suggested as a routine measure for the preservation of fresh meat. Dipping is laborious and suitable for carcasses of small stock only. The destruction of oxytetracycline by cooking was confirmed. Oxytetracycline, as a preservative for fresh meat, might be considered in tropical and semi-tropical underdeveloped countries, where sufficient cold storage facilities are not available, provided the use of this and other antibiotics is controlled by law.

GOODING, C. D. & LONG, J. L. (1957). **Some fluctuations within rabbit populations in Western Australia.**—*J. Aust. Inst. agric. Sci.* **23**, 334-337. **1254**

See also absts. 995 & 1013 (brucellosis in meat); 1036 (toxoplasmosis in meat); 1051 (tick-borne encephalitis in goats' milk); 1218 (hook, evolution of the veterinary art).

Records of the daily catch of rabbits over a 2-year period have been made to determine the sex ratio of all adult rabbits caught, and the proportion of juveniles. Despite the limitations of ferreting as a means of catching rabbits the figures shed some new light on the breeding season of the rabbit in Western Australia.

—A. G. CULEY.

CARRICK, R. (1957). **What is the best free-feeding system for furrow-poisoning the rabbit?**—*C.S.I.R.O. Wildlife Res.* **2**, 78-84. [Abst. from author's summary.] **1255**

The results of enclosure experiments are given in which the natural foraging behaviour of rabbits, and their reaction to a furrow and to free-feeding, were observed. Labelling of the bait with ¹³¹I, and use of spotlights at night, enabled detailed information on the feeding and behaviour of individuals to be obtained. It is recommended that the furrow be left empty for several days and that intermittent free-feeding should follow at similar intervals. Poisoning should continue for several nights. It is suggested that reduction of rabbit numbers to near-eradication level could be achieved by repetitive use of this method of control at short intervals.

GLEESON, J. P. & MAGUIRE, F. S. (1957). **A toxicity study of rabbit fumigants.**—*C.S.I.R.O. Wildlife Res.* **2**, 71-77. [Authors' summary modified.] **1256**

Using chloropicrin as a reference substance and a 7-day observation period, the comparative toxicity to the wild rabbit (*Oryctolagus cuniculus*) of 15 other gases was assessed. With the possible exception of phosgene, hydrogen cyanide was the most toxic. Arsine, cyanogen chloride, and dichloroacetone were of the same degree of toxicity as chloropicrin. The remaining substances were found to be comparatively non-toxic and were not investigated in detail. There are indications that there is a threshold concentration of chloropicrin below which the median lethal dosage increases rapidly. The practical application of these results is discussed briefly.

REPRODUCTION AND REPRODUCTIVE DISORDERS

KOK, J. C. N. & VAN DIETEN, S. W. J. (1957). **De invloed van fructose in het verdunningsmiddel op de beweeglijkheid en het bevruchtungsvermogen van stierenspermien.** [Effect of fructose in semen diluent on the motility and fertility of bull spermatozoa.]

—*Tijdschr. Diergeneesk.* **82**, 63-75. [In Dutch. English, French and German summaries.] **1257**

Results of 8,000 inseminations with semen diluted with ordinary egg yolk-citrate diluent were compared with an equal number of inseminations

nations with 10 g./litre fructose added to the diluent. The presence of fructose did not influence conception rates, although it appeared to enhance motility of the spermatozoa.—R.M.

VANDEMARK, N. L. & SHARMA, U. D. (1957).

Preliminary fertility results from the preservation of bovine semen at room temperatures.

—*J. Dairy Sci.* **40**, 438-439. **1258**

A citrate glucose sulphanilamide diluent was saturated with CO₂ gas (to pH 6.35) before addition of streptomycin and egg yolk. Semen from 2 bulls thus diluted and stored in sealed ampoules, in split sample trials against standard product on 111 cows, indicated that there was little impairment of fertilizing capacity at least up to the 6th or 7th day and that overall non-return rate at 75.7% was 9% better than that secured with the control semen. Neither was there any suggestion of an inordinate early foetal death rate.—F. L. M. DAWSON.

HANCOCK, J. L. & TREVAN, D. J. (1956-57).

The acrosome and post-nuclear cap of bull spermatozoa.—*J. R. micr. Soc.* **76**, 77-84.

[Authors' synopsis modified.] **1259**

A description is given of the development of the acrosome and post-nuclear cap of normal bull spermatozoa and of the abnormal "knobbed" spermatozoa of sterile bulls. The acrosome of the normal spermatid has two components—the "cap" and the "bead". Evidence is presented that the acrosome of the mature spermatozoon has also two components—a periodic acid-Schiff-positive, silver-negative component formed from the cap of the spermatid and a silver-positive component formed from the bead. It is suggested that the equatorial segment is a gap between the silver-positive component of the acrosome and the silver-positive post-nuclear cap. In "knobbed" spermatozoa the bead persists, the silver-positive component of the acrosome is not formed and no equatorial segment is detectable. The development of the post-nuclear cap of "knobbed" spermatozoa is normal.

CONCHIE, J. & MANN, T. (1957). **Glycosidases in mammalian sperm and seminal plasma.**—

Nature, Lond. **179**, 1190-1191. **1260**

Eight glycosidases were identified in spermatozoa, seminal plasma or accessory gland secretions from bulls, boars, rams, stallions, rabbits, dogs, human beings, monkeys and hedgehogs. The most active enzyme was β -N-acetylglucosaminidase and the next most active was α -mannosidase.—R.M.

FRIARS, G. W. (1957). **The effect of lactic acid on the functional capacity of turkey semen in vivo.**—*Poult. Sci.* **36**, 454-455. **1261**

Lactic acid, injected into the oviduct, did not consistently kill the spermatozoa retained by turkey females.—T.E.G.R.

PORTERFIELD, I. D. & OLSON, N. O. (1957).

Vaginal temperature of dairy cows before and after calving.—*J. Amer. vet. med. Ass.* **131**, 381-383. [Authors' conclusions modified.] **1262**

The vaginal temp. in 5 of 8 cows dropped 1.0° to 1.6°F. 24 to 48 hours before calving. In the 3 other cows it fluctuated so much that a definite drop was not detected. These limited data indicate that a drop in vaginal temp. could be used to predict the time of calving in over 50% of cows.

HEINICKE, W. (1957). Fehlerquellen der Trächtigkeitsdiagnose beim Rind. [Sources of error in pregnancy diagnosis in cows.]—*Zuchthyg. FortpflStörungen. u. Besamung.* **1**, 227-237. **1263**

H. considers that a reliable breeding history is the exception rather than the rule. Deviations from the normal position of the uterus, e.g. as the result of an over-full bladder or rumen, are discussed at some length; in early stages a twist in the horn caudal to the conceptus can simulate an empty uterus. The high incidence of comparatively early foetal death should be impressed upon owners following a positive pregnancy diagnosis at 5-7 weeks. In one "pyometra" case 12 litres of pus came away followed by a living full-term calf. Two references are quoted on the unreliability of arterial fremitus as a diagnostic aid. Heinicke has seen a case of genuine "phantom pregnancy" with "preparturient" changes in a heifer. Abortion following fright is attributed to cholinergic vagal stimulation of uterine contraction.—F. L. M. DAWSON.

STRAITON, E. C. (1957). **Bovine obstetrics with a note on so-called "ring womb" in ewes.**—

Vet. Rec. **69**, 395-397. **1264**

Difficult parturition in cattle is discussed. From personal experience the conclusions are drawn that interference should be limited to the correction of presentation where necessary and caesarian section is rarely, if ever, required. The opinion is expressed that "ring womb" in ewes is non-existent.—T.E.G.R.

VELLE, W. (1957). **Urinary oestrogen excretion by the bull.**—*Nature, Lond.* **180**, 856-857. **1265**

The Brown method for urinary oestrogen

estimation was found suitable for determining urinary oestrogen excretion in the bull. The substance isolated in the oestradiol fraction by this method increases significantly in response to the administration of chronic gonadotrophin to bulls.

—J. A. NICHOLSON.

EMMENS, C. W., CLARINGBOLD, P. J. & LAMOND, D. R. (1957). **Action of gonadotrophins on the ovary.**—*Nature, Lond.* **180**, 38-39. **1266**

Groups of immature female mice were given varying doses of pregnant mare serum gonadotrophin and ovariectomized after varying intervals. After ovariectomy the uterus continued to grow to a size related to the dose of gonadotrophin and the time of ovariectomy. A similar experiment, with human chorionic gonadotrophin, yielded similar results which indicate that both gonadotrophins cause liberation of oestrogen by the ovary which is effective in the uterus 3.9 {2.6-5.8} hours after injection.—T.E.G.R.

MELAMPY, R. M., EMMERSON, M. A., RAKES, J. M., HANKA, L. J. & ENESS, P. G. (1957). **The effect of progesterone on the estrous response of estrogen-conditioned ovariectomized cows.**—*J. Anim. Sci.* **16**, 967-975. **1267**

Synergism between progesterone and oestrogen was observed in ovariectomized cows. This action was greatest when progesterone was administered 12 hours before, simultaneously with, or 12 hours after the other hormone. Synergism was also observed between desoxycorticosterone acetate or testosterone propionate and oestrogen.—T.E.G.R.

I. GORDON, I. (1956). **The hormonal augmentation of fertility in sheep.**—*Proc. Brit. Soc. Anim. Prod.* 1955. pp. 55-63. **1268**

II. GORDON, I. (1957). **Hormones and sheep fertility. I. P.M.S.—Increasing the lambing percentage.**—*Agric. Rev., Lond.* **3**, 20-25. **1269**

I. Over 2 breeding seasons field trials with 594 treated and control ewes of the Romney, Cheviot and Southdown breeds were conducted in an attempt to increase flock fertility by the use of pregnant mare's serum. Treatment led to a general increase in fertility. The possibility of using this form of treatment under British conditions was discussed.

II. G. discussed the literature on the use of pregnant mare's serum for increasing flock fertility and gave further results of the trials already mentioned. The method described by Robinson [*V.B.* **22**, 1882] was used. The

average number of lambs born to treated ewes was 1.67 compared with 1.39 for the untreated controls.—R.M.

CSEH, S. & BECZE, J. (1957). **Parasympathetic excitants in the treatment of sterile mares of heavy breeds.**—*Acta vet. hung.* **7**, 1-10. [In English.] **1270**

24 normal mares were given a course of 18 mg. carbamylcholine/80 mg. eserine preparations over 13 days starting from parturition, plus 300 i.u. luteinizing hormone. The onset of foal heat appeared accelerated, from 8.7 to 7.8 days after foaling as compared with controls; duration of oestrus was slightly shorter in the treated animals and conception rate was 75% to first service, controls about 60%. 9 mares infertile to 4-12 services and showing prolonged heats received 2-9 mg. enterotonin, a mean of 30 mg. eserine and 125 i.u. luteinizing hormone after the onset of heat; and 7 then conceived at once; oestrus was shortened to normal in all cases.

Of 72 mares infertile over 3 years, 7 showed no clinical abnormality; 9 showed ovarian dysfunction; 56 showed catarrhal endometritis, complicated by ovarian dysfunction in 22. 26 of these cases were treated by hot uterovaginal irrigation and 16 conceived; 46 had the neurohormonal treatment and 25 conceived, a slightly lower proportion, while only 7 (less severely affected) of 20 untreated controls conceived.

—F. L. M. DAWSON.

DERIVAUX, J. (1957). **De rol van de erfelijke factoren in de voortplanting. [Role of inherited factors in reproduction.]**—*Vlaam. diergeneesk. Tijdschr.* **26**, 29-50. [In Flemish. English, French and German summaries. Abst. from English summary.] **1271**

Some causes of infertility in cattle, such as "white heifer disease", hypoplasia of the testicles, abnormal sexual behaviour in bulls, defects in spermatogenesis and semen characteristics, and nymphomania, are hereditary, and selective breeding is advocated for their elimination. Hypoplasia of the ovary may be due to genetic or environmental factors.

BLOOD, D. C., HUTCHINS, D. R., JUBB, K. V. & WHITTEM, J. H. (1957). **Prolonged gestation of Jersey cows.**—*Aust. vet. J.* **33**, 329. **1272**

Similar abnormalities of calves resulting from two of three half-brother × half-sister matings are described. It is suggested that the defects were inherited.—A. G. CULEY.

DANON, M. & SACHS, L. (1957). **Sex chromosomes and human sexual development.**—*Lancet* **273**, 20-25. **1273**

The authors applied genetical methods in the study of human intersexes and used methods for cytological diagnosis of sex. It may be assumed that for man three sets of causal factors for intersexuality exist:— (1) Genes, presumably simple gene mutations; (2) Abnormal distribution of sex chromosomes (XXY, XO, etc.); (3) Endocrine dysfunction induced by external factors or by genetic factors affecting the endocrine system. The authors discussed the evidence relating to the subject. Both male and female gonadal structures are rarely present in the same person. Of 13 true hermaphrodites whose skin nuclear chromatin was studied, 8 were interpreted as having XX and 5 as having XY chromosomes. All the male pseudohermaphrodites whose skin pattern has been published were regarded as having XY sex-chromosome constitution. In the recently discovered cases of Klinefelter's syndrome, however, a female type of chromatin pattern was found. Of the 13 male pseudohermaphrodites that the authors have analysed by a detailed count of the nuclei with one, two or three chromocentres, they distinguished three groups which appeared to be separated by their chromatin patterns in the skin, as well as by their clinical features. Female pseudohermaphrodites bear ovaries but some have no gonads. 198 persons with gonadal agenesis have been reported, 36 having the female pattern and 162 the male. The authors gave an interpretation of the classification of human intersexes based on gonads and of those based on sex-chromosome constitution. To generalize, they confirmed that

patients with gonadal agenesis must include some males. In man a complete reversal of sex from the female towards the male phenotype and not in the reverse direction occurs. There are probably anomalies in sex-chromosome conditions and real genetical mosaics exist. Most abnormalities in sexual development are related to failures of the endocrine system. In the syndrome of "testicular feminization" and, possibly, in some complicated cases of gonadal agenesis (Turner's syndrome), genetically induced types of intersex possibly caused by abnormal sex chromosome constitution, and in Klinefelter's syndrome, a sex-induced reversal of sex may be recognized. The endocrinologically induced types of intersex (except for irreversibly fixed anatomical deviations) respond well to endocrine treatment. In genetically induced cases, the pituitary is paradoxically insensitive to the normal or almost normal androgens or oestrogens secreted by the gonads.—W.A.P.

BOLIN, F. M., BUCHANAN, M. L., SHUMARD, R. F. & EVELETH, D. F. (1957). **Abortion of fetuses exhibiting evidence of dwarfism.**—*Vet. Med.* **52**, 327-328. **1274**

Hereditary dwarfism which can be carried by both parents is being found in Aberdeen Angus herds in the U.S.A. with increasing frequency. Foetuses may survive birth by 24 hours; they are oedematous and may have undershot jaw, spheroidal heart, and closed occipital condyles [a deformity in which the dorsal extremities of the condyles lie close together]. One cow dying soon after she had aborted a dwarf calf exhibited all these features except the oedema.—F. L. M. DAWSON.

See also absts. 990-1016 (brucellosis); 1018 (vibronic abortion); 1029-1030 (trichomoniasis); 1060 (ovine virus abortion); 1296 (hook, breeding and husbandry); 1297 (book, Robert Bakewell, pioneer livestock breeder).

ZOOTECNRY

SMITH, D. M. (1957). **The relationship between live-weight and carcass-weight increments of pigs.**—*N.Z. J. Sci. Tech. Sect. A*. **38**, 803-806. [Author's summary copied *verbatim*.] **1275**

The live-weight to carcass-weight relationship of 425 pigs kept under standard feeding and management conditions and slaughtered between 29 and 240 lb. live weight is presented. The regression of carcass weight (Y) on live weight (x) was found to be linear, $Y = 0.84x - 4.6 \pm 3.3$ when the regression was based on hot carcass weight and $Y = 0.79x - 4.4 \pm 3.1$ when based on frozen carcass weight (94% of hot carcass weight). Each pound of live-weight increment

yielded 0.84 lb. of hot carcass weight and 0.79 lb. frozen carcass weight at all stages of growth. The dressing percentage (frozen carcass weight as a percentage of live weight) was found to rise from 64% for pigs of 30 lb. to 77% for pigs of 240 lb. live weight.

CRESSWELL, E. (1957). **A new technique for climatological, nutritional and energy metabolism studies with ruminants.**—*Nature, Lond.* **179**, 1139-1140. **1276**

The use of face masks and of costly climatological chambers could at times be avoided by fitting experimental animals with permanent tracheotomy tubes. When recordings are to be made, the plug is replaced by a hollow cone,

holding a tube, 2 mm. in diameter, which projects into the lumen of the upper trachea. At the end of this tube is a rubber balloon, smeared with a non-oily analgesic jelly, which, when

inflated, occludes the upper trachea. By this device the pulmonary gaseous exchanges can be recorded on a spirometer attached to the cone.

—M.G.G.

TECHNIQUE AND APPARATUS

POTOČEK, M. (1957). Nová modifikace kapkové vazby komplementu. [Modification of the drop complement-fixation test.] — *Sborn. čes. Akad. zemědělsk. Věd. Vet. Med.* **30**, 359-378. [In Czech. English, German and Russian summaries.] **1277**

A c.f. technique, of advantage when only small amounts of material are available, and giving rapid and reliable results with the minimum of equipment, is described. The apparatus consists of a transparent plexiglass plate 10 mm. thick, with hollows 6-7 mm. deep and 10 mm. wide, in 12 rows of 12 at intervals of 3 mm., to take the ingredients for the reaction. Calibrated pipettes are used for measuring drops of even size. Results are read by placing the plate on a sheet of white paper with black lines. Visibility of the black lines through the liquid in the hollows depends on the degree of haemolysis which has taken place. Alternatively, the plate may be put on a mirror and judged by the r.b.c. sediment.—E.G.

ZWORYKIN, V. K. & HATKE, F. L. (1957). Ultraviolet television color-translating microscope.—*Science* **126**, 805-810. **1278**

Constructional and operational details are given of equipment which adapts colour vision to the viewing at high magnification on a television screen of living cells and tissues illuminated by ultra-violet radiation. The instrument has so far been used for the study of a number of simple preparations, all unstained and unfixed. Tissue specimens revealed no visible structural changes resulting from the u.v. radiation; paramoecia, tetrahymena and amoebae showed no change in behaviour or motility. Cell preparations frequently revealed fine details, such as chromatin granules in protoplasm; pigments such as haemoglobin or chlorophyll gave rise to striking colour contrasts so that the streaming of protoplasm and cyclosis of chloroplasts became readily visible. Chemical compounds with characteristic u.v. absorptions were readily detected and it was possible to estimate quantitatively their concentrations at any point of the specimen. Permanent records can be made by photography of the television screen; the instrument makes a valuable contribution to biological research.—E.V.L.

WIGGLESWORTH, V. B. (1957). A simple method for staining mitochondria.—*Nature, Lond.* **179**, 1033-1034. **1279**

Small pieces of tissue are fixed at 0° to 4°C. for several hours in 1% osmium tetroxide buffered at pH 7.25 with veronal acetate buffer in isotonic saline soln. Next they are placed in a saturated soln. of ethyl gallate in 0.25% cresol for 24 hours or longer. They are then embedded in polyethylene glycol wax, cut at 0.5-2 μ , floated on water and the sections mounted individually in glycerol jelly to which ethyl gallate has been added. The method is simple and reliable, requiring neither skill nor experience.

—M.G.G.

WEBSTER, G. R. (1957). Clearing action of lysolecithin on brain homogenates.—*Nature, Lond.* **180**, 660-661. **1280**

The effect of lysolecithin on clearing of rat brain homogenate was an initial rapid increase during the first 10 min. followed by a more gradual rise, over a period of 2 hours, to a maximum value. The final degree of clearing produced in 3 hours increased with increasing concentrations of lysolecithin and reached a limiting value of about 80% of the optical transmission of water with 0.007-0.008 M lysolecithin. After centrifuging only a slight increase in optical transmission was apparent in the tubes containing the higher concentrations of lysolecithin. This is taken to indicate that most of the brain tissue had gone into soln. The mechanism of this clearing action is briefly discussed. The clearing action of other substances was also tested.—T.E.G.R.

HART, E. W., ELDRIDGE, R. J. & MILLARD, R. A. (1957). Modification of polyethylene catheter for intravenous infusions.—*Lancet* October 19th, 776-777. **1281**

The polyethylene catheter is inserted for $\frac{1}{8}$ - $\frac{1}{4}$ inch into one end of a 2 inch length of polyethylene tubing having a bore equal to the external diameter of the catheter. The joint is fused by rotating against a warm metal strip; a thin wire is inserted to prevent the tubes from collapsing during sealing. A leak-proof joint is obtained by moulding down the edge of the outer tube to a fine bevel. The connection between the

transfusion set and the catheter is made by means of an adapter needle (a hypodermic needle of the same dimensions as the catheter and with the point cut off) inserted into the other end of the outer polyethylene tube. This modification ensures a constant lumen and eliminates dead spaces in which r.b.c. sediment.

—T.E.G.R.

HAMILTON, F. J. (1957). **A tourniquet for controlling haemorrhage from the liver during experimental biopsies and lobe resection in sheep.**—*Aust. vet. J.* **33**, 273-276. [Author's summary copied *verbatim*.] **1232**

The construction and use of a simple tourniquet for controlling haemorrhage from the liver

of sheep during partial hepatectomy are described.

LEWIS, E. F. (1957). **A fixed-focus, close-shot camera mounting for veterinary clinical photography.**—*Brit. vet. J.* **113**, 133-134. **1283**

The camera and flashlight apparatus are mounted on a platform and an adjustable pressure plate (on the end of 2 running rails which pass through collars on the front of the mounting) is fitted $\frac{1}{2}$ -1 inch below the photographic field. When the working distance has been ascertained and the lens focus fixed the pressure plate can be locked in position by means of screws in the collars. Position can be maintained and any part of a fully conscious animal photographed by keeping steady pressure, through the plate, against the animal.—T.E.G.R.

REPORTS

I. NORWAY. (1956). Veterinaervesenet 1953. [Annual Report of the Norwegian Veterinary Service, 1953.]—*Norges offisielle Statistikk* Ser. 11, No. 224, pp. 122. **1284**

II. NORWAY. (1957). Veterinaervesenet 1954. [Annual Report of the Norwegian Veterinary Service, 1954.]—*Ibid.* No. 270, pp. 110. **1285**

I & II. The incidence of infectious and non-infectious diseases of farm livestock is shown

in very detailed tables, provided with French or Latin synonyms of diseases. In neither year were there any cases of swine fever, foot and mouth disease, or bovine brucellosis. In each year there were about 400 cases of BOVINE MALIGNANT CATARRH. The incidence of TUBERCULOSIS remained low: in 1954 it was diagnosed in 14 cattle; but 755 pigs and 129 out of 315 poultry flocks were infected.—R.M.

BOOK REVIEWS

SCOTT-WILSON, H. W. [Director, Laboratories of Pathology and Public Health, London.] (1957). **Aids to bacteriology.** pp. viii+403. London: Baillière, Tindall & Cox, 9th Edit. 12s. 6d. **1286**

The text of this book, designed primarily for medical students, has been revised and brought up to date. New matter replaces older and less important items and the size, scope and general arrangement of the book have been maintained. Bergey's terminology is generally adopted; in cases where this nomenclature is not in common use in Great Britain the generally recognized names are employed. A useful addition is an appendix which contains tables of bacteria grouped according to their distinguishing characteristics.—T.E.G.R.

PRIGGE, R. & HEYMAN, G. (1957). Grundlagen und Möglichkeiten der Tuberkuloseschutzimpfung. [Immunization against tuberculosis in man.] pp. 95. Munich (Berlin & Vienna): Urban & Schwarzenberg. DM 9.80. **1287**

The purpose of this concisely written little monograph is to summarize present-day know-

ledge of control of human tuberculosis. There are chapters on natural resistance, allergy, biochemistry of tubercle bacilli, relationship between allergy and immunity, immunization with virulent, attenuated and killed tubercle bacilli and with their components or metabolic products. There are twelve closely-printed pages of references.—E.G.

ROTHSCHILD, M. & CLAY, T. (1957). **Fleas, flukes and cuckoos. A study of bird parasites.** pp. xiv+305. London: Collins. 25s. **1288**

The study of parasites is surely one of the most interesting facets of natural history, yet it is one largely unexplored by the non-specialist. This is in part due to the shortage of books which have a wide appeal. It is particularly pleasing, therefore, to find a book about parasites especially written for the general reader.

"Fleas, Flukes and Cuckoos" is, as the subtitle informs us "A Study of Bird Parasites." To endeavour to cover such a vast subject in a single volume is a formidable task. The authors have however, succeeded in presenting the many

aspects of such a study, of necessity somewhat briefly, in a most readable manner.

The book is divided into three parts. The first deals with the more general aspects of Parasitology. Chapters on the different degrees of parasitism reveal some fascinating habits of birds. The effects of the parasite on the host are briefly discussed as are the effects of the parasitic mode of life on the parasite itself. How such a way of living has originated is sure to be asked by all who start to read this book. An endeavour to answer this question is found not only in the last chapter of Part I but throughout the text.

Part II is a consideration of the intimate relationship between host and parasite, with fleas and feather lice as examples—a choice influenced by the special interests of the two authors.

Part III is a brief survey of the various groups of parasites which attack birds in Great Britain, ranging from the single celled *Eimeria* to the well known cuckoo.

A vast amount of information is presented; it is, however, frequently penetrated by shafts of wit which makes for easy reading. Numerous photographs and drawings, together with a useful bibliography add to the merits of the book.

—J. H. ROSE.

JACQUOT, R., LE BARS, H. & SIMONNET, H. (1958). Nutrition animale. Biologie, physiologie et alimentation rationnelle. Volume I. Données générales sur la nutrition et l'alimentation. [**Animal nutrition. Volume I. General aspects.**] pp. 472. Paris: Baillière et fils. **1289**

The physiology, biochemistry and zoo-techny of animal nutrition are combined in this first volume compiled by specialists in their respective sections. The introductory part deals briefly with the problems, methods of study and theory of animal nutrition. The text is in two parts, the first of which gives the definition and classification of foods, the individual food factors and their chemical composition, and a chemical analysis in tabular form, of the different foodstuffs. The second part is in two chapters: one on digestion, absorption and utilization of food; the other on the digestive processes in the different species and the digestion, absorption and utilization of individual food principles. This book contains a number of illustrations, a list of abbreviations and symbols, a list of references and a subject index. Print and paper are good.—T.E.G.R.

FRASER, A. [Lecturer in Animal and Dairy Husbandry, University of Aberdeen.] & STAMP, J. T. [Director, Animal Diseases Research Association, Edinburgh.] (1957). **Sheep husbandry and diseases.** pp. xii + 444. London: Crosby Lockwood & Son, Ltd. 3rd Edit. 35s. **1290**

This edition differs from the first one in that it includes two new chapters on sheep husbandry and a veterinary section (by J. T. Stamp). The first part of the book, written as a series of essays, consists of seven chapters dealing with: the world's sheep trade, sheep breeds, breeding, production, nutrition and husbandry. In the veterinary section, which forms the second part, the author discusses acute diseases (characterized or not by sudden or early death), chronic debilitating diseases, and diseases with localized symptoms. The book is written in plain, non-technical language and carries 93 illustrations.—T.E.G.R.

GRZIMEK, B. & GYLSTORFF-SASSENHOFF. [Revised by.] (1957). Krankes Geflügel. Handbuch der Geflügelkrankheiten. [**Handbook of poultry diseases.**] pp. 376. Berlin (& Stuttgart): Verlag Fritz Pfenningstorff. 7th edit. DM 14. **1291**

Over half of this work deals with infectious diseases of poultry. Chapters on helminth parasites take up only about 18 pages, those on arthropods slightly less. There are chapters on poisoning, heredity, non-infectious diseases and surgery. Illustrations, mostly photographs, number 188. A most useful feature is the bibliographical list at the end of the book, which is classified by diseases, giving about a thousand references to world literature.—E.G.

REIS, J. & NÓBREGA, P. (1957). Tratado de doenças das aves. Vol. I. Doenças produzidas por vírus. Vol. II. Doenças produzidas por bactérias e fungos. Vol. III. Doenças produzidas por protozoários e artrópodes parasitas. Vol. IV. Doenças produzidas por helmintos, doenças da nutrição, doenças dos órgãos e aparelhos vícios—envenenamentos, patologia do desenvolvimento, higiene — terapêutica geral e cirúrgica. [**Treatise of diseases of birds. Vol. I. Diseases caused by viruses. Vol. II. Diseases caused by bacteria and fungi. Vol. III. Diseases caused by protozoan and arthropod parasites. Vol. IV. Helminth parasites, miscellaneous diseases, hygiene and surgery.**] Vol. I & II pp. 391 & 416. Vol. III & IV pp. 318 & 428. São Paulo: Edições Melhoramentos. 2nd Edit. **1292**

During the 21 years between the two

editions much fresh knowledge on diseases of birds has been accumulated and incorporated into this second edition which has consequently attained four times its original size, being enlarged both in text and in illustrations which are numerous and, on the whole, very good. The original structure of the book has been maintained but the text has been revised and re-cast. The work now consists of two separately bound books each containing two volumes. In the first volume, which deals with virus diseases and neoplasms, there are several new sections—on Newcastle disease, infectious bronchitis, duck hepatitis, grahamella and rickettsia, PPLO infections, X disease, avian encephalomyelitis and equine encephalomyelitis virus infection in birds. The section on neoplasms has been greatly amplified. In the second volume bacterial diseases are classified according to the order, family and genus of the causal organisms. The third volume deals with protozoan diseases and with arthropod parasites, and the fourth consists of three sections—on helminth diseases, nutritional diseases and organic diseases. Synonyms of disease names in different languages are given at the beginning of each chapter.

Striking features of this treatise are its clear, systematic presentation, its wealth of up-to-date information and lack of irrelevant detail. The extensive bibliography is evidence of familiarity with world literature and greatly enhances the value of this book which fully deserves to be recognized as an outstanding work and an authority on diseases of birds. Paper, print and binding are very good.—T.E.G.R.

WRIGHT, J. G. [Professor of Veterinary Surgery, University of Liverpool.] (1957). **Veterinary anaesthesia**. pp. xiii+317. London: Baillière, Tindall & Cox. 4th Edit. 30s. 1293

Progress made in human anaesthesia since the last publication of this book in 1952 has stimulated the veterinary profession to investigate new methods and drugs with a view to their use in veterinary surgery. In this edition, which contains some 50 pages more than its immediate predecessor, the author presents clearly and concisely the results of studies carried out by himself and by other workers in the U.S.A. the U.K. and elsewhere. These results are critically discussed and considered and the reader is largely left to draw his own conclusions on the relative merits of the anaesthetic techniques and agents under investigation, although in some instances a certain bias is quite naturally and justifiably expressed in favour of simpler methods which are firmly established.

Among the subjects discussed are: pre-anaesthetic medication; "muscle relaxants"; ultra-short-acting barbiturates; intratracheal intubation (for anaesthetization and for artificial ventilation of the lungs); lumbar epidural injection and pudic nerve block in cattle; curare and curare-like drugs; and, resuscitative measures. The chapter on anaesthesia for castration of the male has been omitted because it is considered that the veterinarian is now in a position to make his own selection of the appropriate method for the individual case.

The high standard of print, paper and binding has been maintained and the illustrations and line drawings are very good. A useful addition is an appendix of conversion tables for metric and British weights and measures. The book is well indexed and references are given.

—T.E.G.R.

KLIMOV, A. F. [revised by AKAEVSKII, A. I.] (1955). [**Anatomy of domesticated animals. Volumes I & II.**] Vol. I. pp. 576, vol. II pp. 456. Moscow: Gosud. izd. sel'khoz. lit. 4th Edit. 28r. 90k. [In Russian.] 1294

There is hardly any other text-book in which the quantity and quality of the illustrations contained play such an important role as in text-books of anatomy. It is therefore rather unfortunate that this important aspect has been rather neglected in this new, fully revised edition of the original work of Klimov. The high standard of the text is hardly matched by the sketchy drawings, often lacking precision and contrast. There are 24 coloured plates in volume II, but only two or three are original.

The main sections of the first volume deal with the 'organs of voluntary movements' (skeleton, muscles, joints), the integument (excluding organs of sense), and the digestive and respiratory system. The second volume deals with the urinary and reproductive systems, the organs of blood and lymph circulation, the nervous system (including organs of sense), and the anatomy of the fowl. The horse is used as the type animal and other animals (ox, pig and dog) are described by means of comparisons and contrasts. Except in the section on the reproductive system, there is no reference to the sheep.

Each chapter is preceded by short notes on phylogenesis of the organ to be described, a helpful introduction for a young reader to the anatomical complexity that follows. The separate index of Latin names at the end of each volume is a welcome and useful addition. This work costs 25s. in the United Kingdom.

—S. TERLECKI.

BENZIE, D. & PHILLIPSON, A. T. (1957). *The alimentary tract of the ruminant*. pp. 24. 54 plates. Edinburgh (& London): Oliver & Boyd. 27s. 6d. **1295**

This is a collection of 54 plates of radiographs of the alimentary tract of calves, lambs, kids, and adult sheep and goats. The radiographs have been taken at intervals after administration of barium meals in various forms, and some also show the position of silver markers attached to different parts of the digestive tract. Each radiograph is accompanied by an explanatory diagram.

A 24-page introduction describes the methods used and also discusses radiological tolerance in ruminants, and summarises the principal findings. Thus it was observed that a calf which swallowed gruel into the reticulum and rumen grew slower than its twin, which swallowed gruel the normal way, into the abomasum. Further studies by this technique may reveal more precisely the mechanisms of belching, regurgitation, and the movements of the omasum. The authors hope that the work they have recorded will encourage others to use the radiographical technique. The book is a unique and invaluable contribution to the study of abdominal topography and the physiology of ruminant digestion.—R.M.

SCHMIDT, J., V. PATOW, C. & KLIESCH, J. (1957). *Züchtung, Ernährung und Haltung der landwirtschaftlichen Haustiere. [Breeding, nutrition and husbandry of farm animals. Part II. Special.]* pp. viii+415. Berlin (& Hamburg): Paul Parey. 7th revised edit. DM 29. **1296**

This is probably the best available guide to methods of animal husbandry employed in Germany, and it is up to date and copiously supplied with livestock statistics. This edition of Part II replaces the 1953 edition. It deals with cattle, horses, pigs, sheep, goats and fowls, with emphasis on breeding but also including feeding. Figures quoted reveal that in West Germany in 1955 there were 11·5 million cattle, 14·5 million pigs, 31,000 horses (compared with 107,000 in 1938), 1·2 million sheep (2·5 million in 1948), 770,000 goats and 52·3 million fowls.

—R.M.

PAWSON, H. C. [Professor of Agriculture, University of Durham.] (1957). *Robert Bakewell, Pioneer livestock breeder*. pp. xv+200. London: Crosby Lockwood & Son, Ltd. 25s. **1297**

Robert Bakewell (1735–1795) is credited

with the foundation of modern breeding practice from his work on the improvement of Leicester sheep and to a lesser extent Longhorn cattle. This biography is timely if only because Bakewell's farm at Dishley Grange (near Loughborough), and his neglected grave nearby, may soon be swept away by urbanization. About half the book is taken up with copies of Bakewell's letters, some of which are in the British Museum. The book is a valuable contribution to the history of livestock breeding.—R.M.

SMITHCORS, J. F. [Associate Professor of Anatomy, College of Veterinary Medicine, Michigan State University.] (1957). *Evolution of the veterinary art. A narrative account to 1850*. pp. xvii+408. Kansas City: Veterinary Medicine Publishing Co. \$6.50. **1298**

The title of this book speaks of the veterinary art, but that of the last chapter of scientific veterinary medicine. The book is broken down interestingly into nine chapters on, Prehistoric Veterinary Medicine; Ancient Civilisations; Byzantine Veterinary Medicine; Mediaeval Veterinary Medicine; Renaissance Period; Seventeenth Century; Eighteenth Century; Education for Veterinary Practice; Scientific Veterinary Medicine.

The author acknowledges that he has quoted, possibly extensively, from Smith's Early History of Veterinary Literature and from Leclainche's Histoire de la Médecine Vétérinaire and other previous work on the subject. He does not refer to the writings of the late J. T. Edwards on veterinary history. Parts of this book seem very familiar to those who know these earlier writings.

It is sometimes difficult to follow the author's theme. In the four pages devoted to the fourteenth century there is much about the "Black Death" in man, with emphasis on the effects on domestic animals as a result of shortage of personnel to attend to their needs. Some of the comments on the disease appear to infer that this disease did, indeed, occur in farm animals although it is stated that the plague organism does not affect them. Incidentally, too an incident from Boccaccio's Decameron is mentioned in which two pigs rooted around the rags from a man just dead from the disease and themselves died in less than an hour; the author surmises that they may have died from scab or "leprosy" [sic]. On p.353 when speaking of Hogg, the "Ettrick Shepherd," on braxy the author adds that it is "a form of anthrax." He is not always sound on the nature of disease.

There are 42 full-page plates; the legends

might often be more informative. For example, that for Plate 12 indicates that a skeleton is possibly portrayed, but there are five items on the page and it would be difficult to guess what two of them are meant to represent. It would be fair to say that this book should be read with care. It covers a very wide field and the sources of information are often themselves suspect. The most an author can do in these circumstances is to form his judgments and give emphasis where he considers this warrantable, a very difficult task.

Perusal of such a book necessarily starts a reader off on much reflection on how our art and science has evolved. There is much to praise in the manner in which individuals and bodies have played their roles and, inevitably, a great deal to condemn in the codes of behaviour of man towards animals. This book brings out many examples of barbarity and not only by those who could hardly be expected to know better.

The text is written in an interesting manner. Any particular episode could be read with appreciation by itself.

Veterinary history has its serious students on both sides of the Atlantic. Much requires to be written still about affairs up to the beginning of the era of bacteriology, and the story of the great developments from the time of colonial expansion merit a fat volume in themselves. This book should do much to stimulate interest in veterinary history. The author gives an impressive account of the material he has used and is to be congratulated on the compilation of a very useful text.

The paper, binding and print area are all of a good standard and it is a comfortable book to handle.—W.A.P.

ANON. (1957). **Index of agricultural research 1957.** pp. xiv + 189. Cambridge: University Press for Agricultural Research Council. 12s. 6d. **1299**

This is the third edition of the Index first published in 1951 [V.B. 22, 1229]. It is a guide to research in progress in the United Kingdom.

—R.M.

HEWITT, R. M. [Senior Consultant, Section of Publications, the Mayo Clinic.] (1957). **The physician-writer's book. Tricks of the trade of medical writing.** pp. xxiii + 415. London (& Philadelphia): W. B. Saunders Company. 68s. **1300**

A good new book on medical writing will always be sure of a welcome, not only from writers themselves but also from those concerned with editing for publication. Although this book is intended mainly for the writer, the author expresses the hope that editors will also show a friendly interest, and he describes his own editing technique, with examples. The table of contents gives the complete plan of the book, occupying 13 pages. The first four parts deal with the whole article or book, the paragraph, the sentence, and with words, respectively. Tables and illustrations are dealt with in Part 5; Part 6 is entitled: Preparing the manuscript for release and securing a copyright, and Part 7 is devoted to ethics. Under these parts there are 39 chapters, and in addition there are 21 appendices in which the same plan of arrangement is followed. There is a good index and most of the chapters end with a list of references. The book is excellently printed and produced. It is sure to be in great demand.

—F.E.W.

BOOKS RECEIVED

[Notice of recently received books in this list does not preclude review.]

ALTARA, I. (1956). *Patologia aviaria e igiene degli allevamenti avicoli. [Avian pathology and the hygiene of poultry farming.]* pp. xii + 701. Teramo: *Veterinaria Italiana*.

BAKER, E. W., EVANS, T. M., GOULD, D. J., HULL, W. B. & KEEGAN, H. L. (1956). **A manual of parasitic mites of medical or economic importance.** pp. 170. New York: National Pest Control Association, Inc. [Technical Bulletin.]

BREUER, D. (1957). *Weltkatalog der veterinärmedizinischen Lehranstalten. [World cata-*

logue of veterinary teaching establishments.] pp. 222. Hanover: Hygienischen Institut der Tierärztlichen Hochschule.

CAMERON, C. R. (1957). **New pathways in cellular pathology.** pp. vii + 90. London: Edward Arnold Ltd. 16s.

FRANCIS, J. **Tuberculosis in animals and man. A study in comparative pathology.** pp. xii + 357. London: Cassell & Co. Ltd. 105s.

METCALF, R. L. (1957). **Advances in pest control research.** Vol. 1. pp. vii + 514. New York (& London): Interscience Publishers, Inc. \$11.00.

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ERRATA

V.B. 28, abst. 44. In title translation, for "antibodies" read: antibiotics.

abst. 657. In title translation please read: Intravenous.

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